

# M

# edical

# TIMES

THE JOURNAL OF GENERAL PRACTICE

Clinical Value of  
Bone Marrow Examination  
Myocardial Infarction  
Extirpation of Ingrown Toenails  
Coronary Heart Disease  
Steroid Therapy for  
Allergic Disease  
Infants Born of Diabetic and  
Prediabetic Mothers (Refresher)  
Rectal Bleeding  
Mechanical Heart-Lung Apparatus  
Sex In Utero  
Diabetes Mellitus  
New Drugs and the Child  
Hookworm Infection  
Diabetes and the Law  
Conference  
Pilonidal Cysts (Office Surgery)  
Editorials  
Investments  
Are Favorites a Buy?  
How to Invest  
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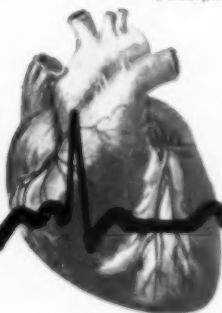
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C I B A SUMMIT, N. J.

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1. Austrian, R., and Winston, A.L.: Am. J. M. Sc. 232:624 (Dec.) 1956

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Opinions expressed in articles are those of the authors and do not necessarily reflect the opinion of the editors or the Journal.

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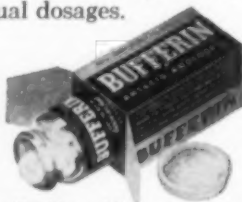
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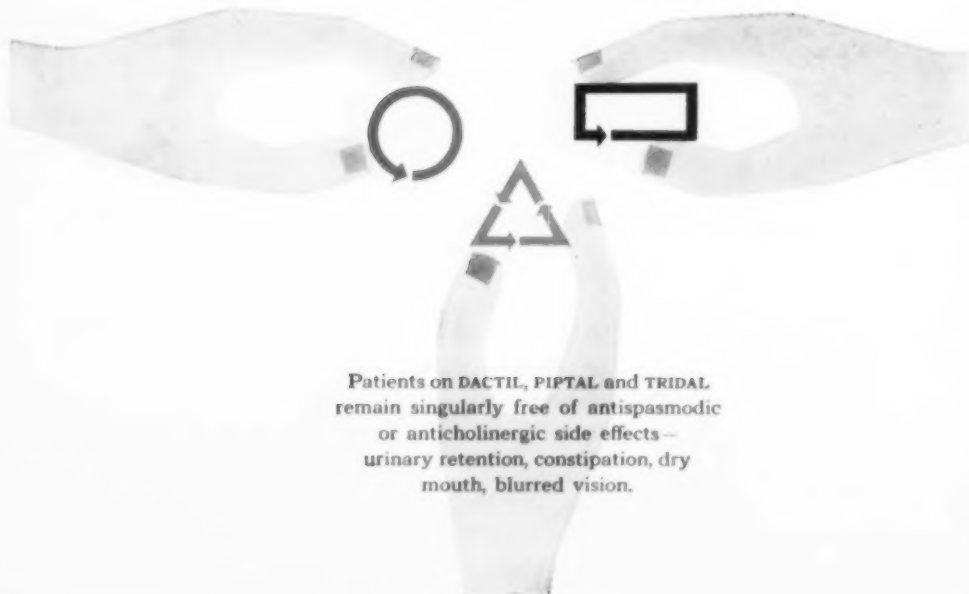
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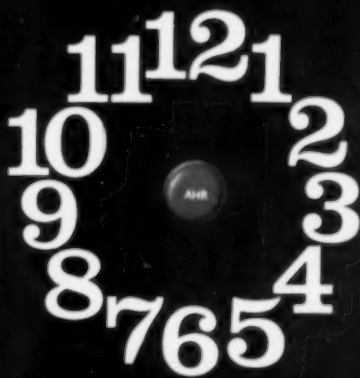
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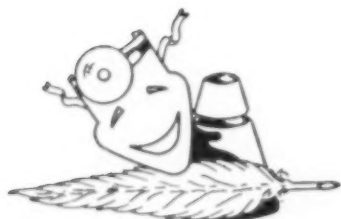
\*Schwab, R. S., and Leigh, D.,  
J.A.M.A. 139:629, 1949.

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## Off the Record . . .

### True Stories From Our Readers

Each incident described has been contributed by one of our readers. Contributions describing actual and unusual happenings in your practice are welcome. For obvious reasons only your initials will be published. An imported German apothecary jar will be sent in appreciation for each accepted contribution.

#### Always Fatal!

A woman called me and said, "Doctor, I cough, sneeze and pain in the stomach; I think I have Testicle Grippe."

B. G., M.D.  
Lynn, Mass.

such a thing as a horse doctor!"

"Of course there is, Joel."

"Now, Bernice, how can a horse carry a satchel!", was his retort.

Anonymous

#### That Explains It!

Several years ago while practicing in New York City, a young girl of about 15 years of age came in for a physical examination. Upon examining her heart, and just before I applied the stethoscope to her chest she said, "Doctor, I have a rheumatic heart with a double mitral murmur." I asked her if she had any thrills and she replied, "No, I don't go out with boys."

A.S., M.D.  
Wappinger Falls, New York

#### What a Nerve!

When Mrs. Jones' little 4 year old caught her arm in the wringer she called a cab to rush her to my office. The cab driver told her that prayer and trusting in God was all that was necessary to fix anything and that "doctors don't do much good anyway." He told her about the Assembly of God's church, but it was closed just then. He drove around for over half an hour, telling how he has almost reformed from alcoholism and convicted sex sadism — but Mrs. Jones noted that the driver didn't match the picture of the licensed chauffeur, that he was gradually driving into more secluded spots and beginning to make advances because "he had pleased many women in his day even though he was not married." Mrs. Jones, 22 and pretty, finally insisted on "seeing the doctor

#### "Hoarse" Talk

When our housekeeper, a country girl, returned from a weekend at home, she was telling our young son that their cow had been sick and they had to call the "horse doctor".

"Bernice, you can't tell me there is

—Continued on Page 74



SEARLE STEROID  
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# ENOVID\*

BRAND OF NORETHYNODREL WITH ETHYNYLESTRADIOL 3-METHYL ETHER

## new oral synthetic endometropin for control of menstrual irregularities

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Enovid simulates the normal ovarian activity necessary to the maintenance of regular menstrual cycles.

Acting on the endometrium, the vaginal mucosa and the anterior pituitary, Enovid therapy has proved effective in the regulative control of such irregularities as primary and secondary amenorrhea<sup>1,2</sup>, dysmenorrhea<sup>4</sup>, prolonged or excessive menstrual bleeding<sup>1,3</sup> and distressing premenstrual tension<sup>5</sup>.



# INDICATIONS AND DOSAGE GUIDE FOR ENOVID

CONDITIONS	FIRST CYCLE	SECOND AND THIRD SUCCEEDING CYCLES
Amenorrhea (Primary or Secondary)	One tablet daily for 20 days to establish cycle	One tablet daily from day 5 to day 25*
Metrorrhagia	One or two tablets daily to day 25 or for 10 days to establish cycle†	Same as above
Menorrhagia	One or two tablets daily through balance of cycle†	Same as above
Oligomenorrhea	One tablet daily from day 5 to day 25*	Same as above
Dysmenorrhea	One tablet daily from day 5 to day 25‡	Same as above
Premenstrual Tension	One tablet daily from day 15 to day 25§	Same as for first cycle
Inadequate Luteal Phase	One tablet daily from day 15 to day 25	Same as for first cycle

\*The administration of Enovid prior to day 15 may interfere with ovulation and if this is undesired, day 15 to day 25 may be substituted.

†If the patient is bleeding when first seen, two tablets will usually control the bleeding. In some patients less severe bleeding may be controlled with one tablet. The dosage used should be continued through the remainder of the cycle.

‡If dysmenorrhea is due to endometriosis, a special dosage schedule is required; Kistner<sup>6</sup> suggests 10 mg. daily for two weeks, 20 mg. daily for two weeks, 30 mg. daily for two weeks and 40 mg. daily for two to five months.

§Heller<sup>5</sup> recommends one tablet every twelve hours from day 5 to day 25 for two or three cycles.

## REFERENCES:

1. Southam, A. L.; 2. Roland, M.; 3. Kupperman, H. S.; and Epstein, J. A.; 4. Weinberg, C. H.: Papers Presented during a Symposium on Steroid Compounds Exhibiting Progestational Effects, Chicago, Searle Research Laboratories, January 23, 1957, to be published. 5. Heller, C. G.: *Internal*.

Rec. Med. 169:760 (November) 1956. 6. Kistner, R. W.: The Use of Newer Progestins in the Treatment of Endometriosis—A Pseudopregnancy, Section on Obstetrics and Gynecology, American Medical Association, New York, June 5, 1957.

## FORMULA:

Each 10-mg. tablet of Enovid contains norethynodrel, a new synthetic steroid, and 0.15 of ethynylestradiol 3-methyl ether.

\*TRADEMARK OF G. D. SEARLE & CO.

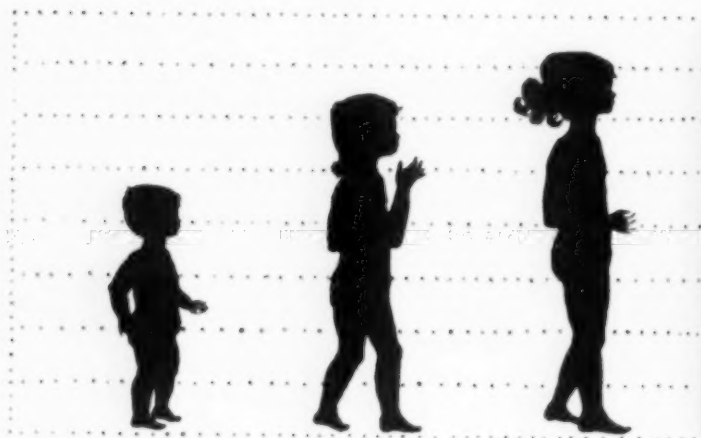
Supplied in uncoated, scored, coral-colored tablets.

G. D. Searle & Co., Chicago 80, Illinois.

SEARLE

Research in the Service of Medicine

# THE LOW PROTEIN PROFILE?



Poor appetite  
Growth failure  
Poor musculature  
Gastrointestinal disturbances  
Frequent infectious disease  
Pallor  
Dental caries  
Peevishness

Habitually low intake of high quality protein foods, such as meat, fish, eggs or cheese, leads to the common childhood syndrome of hypoproteinosis—recognizable by the signs and symptoms of the LOW PROTEIN PROFILE.

Cerofort Drops and Cerofort Elixir can help these children!

The essential amino acid, lysine, will increase the nutritional value of the marginal protein in bread, cookies, macaroni, or other cereal foods. In these low quality proteins, lysine establishes an amino acid pattern similar to that of high quality protein, thus approximately doubling their tissue-building value. The B vitamins will stimulate lagging appetites so that more food of better quality will be consumed.

Long established dietary habits are slow to change, but Cerofort Drops and Cerofort Elixir work quickly. They have been developed for your LOW PROTEIN PROFILE patients.

## FOR INFANTS AND CHILDREN UP THROUGH THE EARLY SCHOOL YEARS—

### CEROFORT DROPS

The daily dose of 1.5 cc. provides:

L-Lysine Monohydrochloride	450 mg.*
Vitamin B <sub>12</sub>	25 mcg.
Thiamine Hydrochloride	10 mg.
Pyridoxine Hydrochloride	5 mg.
Alcohol 1%	

\*approximately equivalent to 340 mg. of L-lysine

Pleasant tasting, readily miscible with all liquid foods. Recommended dose: one dropperful (0.5 cc.) t.i.d. at mealtime for maximal benefit of lysine fortification. For infants, add 0.5 cc. to formula t.i.d. Shake to mix. Or, add three 0.5 cc. dropperfuls to entire day's supply of formula after mixing ingredients and before bottling.

Supplied in bottles of 24 cc. with dropper marked to deliver approximately 0.5 cc.

## FOR OLDER CHILDREN AND ADOLESCENTS—CEROFORT ELIXIR

The daily dosage of 3 teaspoonfuls (15 cc.) one with each meal provides:

L-Lysine Monohydrochloride	790 mg.*
Vitamin B <sub>12</sub>	25 mcg.
Thiamine Hydrochloride	10 mg.
Riboflavin	10 mg.
Pyridoxine Hydrochloride	2 mg.
Niacinamide	100 mg.
Panthenol	20 mg.
Alcohol 5%	

\*equivalent to 600 mg. L-lysine

Supplied in bottles of 8 fl. oz. and gallons

## USE

# Cerofort® drops elixir

L-lysine and important B vitamins

first with lysine



WHITE LABORATORIES, INC.  
Kenilworth, N. J.

first anyway" and came to my office in a state of hysteria . . . while he sat in the car awaiting her return.

Needless to say, I had the police pick him up immediately. They found him to be the long looked-for habitual criminal with a long record of sex perversion.

However, to my surprise, when Mrs. Jones brought her little daughter back two days later for redressing the arm, she said, "You know that cab driver I was telling you about last time? He had promised to wait for me to take me home. I looked and looked all over for him, but I have not been able to find him."

L.H.S., M.D.  
Salt Lake City, Utah

#### How About It, Doc!

An older gentleman was given treatment for arteriosclerotic disease. He was advised, among other measures, to take 2 aspirin tablets and a jigger of whiskey at bedtime. He was told to return in one week, at which time he asked if "2 jiggers of whiskey and one aspirin tablet would work just as well."

W.D.McG., M.D.  
Grand Island, Nebraska

#### A Doctor's Fourth of July Weekend

On Saturday afternoon, July 3rd, at 2 o'clock, I received a phone call from a man who said he was a patient of another doctor. He stated that his son had struck himself in the eye with a steel pole, and wanted to know if he should take him to an eye doctor. I told

him I couldn't say without examining the child. After talking for twenty minutes on the phone, he decided to take the boy to an eye specialist.

On Sunday morning, July 4th, at 9 o'clock, I received a telephone call from a lady patient of another doctor. She lives in a neighboring town, although her home is only eight blocks from my office. She asked whether I would be able to see someone who had been injured that morning. I told her I would be glad to see her since it was an emergency. Fifteen minutes later, she called back and stated that the injured person insisted on a doctor in the same town.

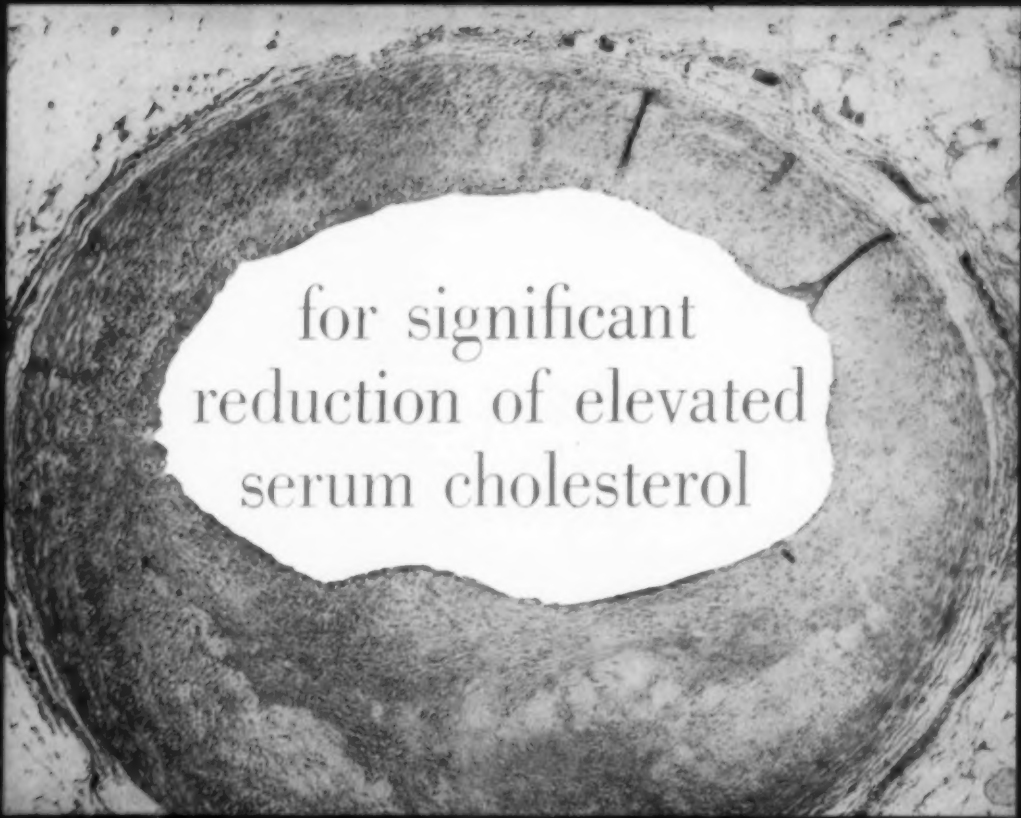
On July 5th, at 7 p.m., my wife received an urgent call from a patient of another doctor, who stated she had to see a doctor as soon as possible. She came to the office about an hour later, slightly inebriated, and stated that she'd had a rash on her leg for 6 months, but had to see a doctor immediately. After the examination was completed, she requested that I send the bill to her. The fee was finally collected a year later through the work of a collection agency.

V.S., M.D.  
Red Bank, New Jersey

#### Diet's Delight

Says Mrs. Obese as she leaves my office with a copy of her reducing diet in her hand, "Doctor, do I take this *before or after* my meals?"

M.J.T., M.D.  
Schenectady, New York



for significant  
reduction of elevated  
serum cholesterol

new **LINO**

linoleic acid (essential unsaturated fatty acid) and pyridoxine HCl

two factors recommended as aids in the  
management and prevention of atherosclerosis

*linoleic acid*—essential unsaturated fatty  
acid—to help restore and maintain the  
proper ratio between saturated and un-  
saturated fat in the diet

*pyridoxine*—essential for the utilization  
of linoleic acid in the body

Pfizer Laboratories, Division, Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.

**Pfizer**

## Hypercholesterolemia and Atherosclerosis

Although the exact etiology of atherosclerosis is not known, there is overwhelming and mounting evidence implicating elevated serum cholesterol in the pathological processes leading to the formation of atheromatous lesions.<sup>1,2</sup> In a recent study of 898 men, 45 to 62 years of age, approximately 49 per cent initially showed serum cholesterol levels of 225 mg. per cent, or higher. Hypercholesterolemia was strongly associated with the development of new arteriosclerotic heart disease in this age group during four years of follow-up study.<sup>3</sup>

Statistically, hypercholesterolemia has regularly been shown to have a positive correlation with atherosclerosis.<sup>4</sup> Reduction of elevated serum cholesterol levels appears to be warranted, therefore, in all patients with hypercholesterolemia.

*References:* 1. Keys, A.: *Am. J. Pub. Health* 43:1399 (Nov.) 1953. 2. Gutman, A. B.: *Am. J. Med.* 14:1 (Jan.) 1953. 3. Dawber, T. R.; Moore, F. E., and Mann, G. V.: *Am. J. Pub. Health* 47:4 (April) 1957. 4. Keys, A.: *Proceedings, Conference on Atherosclerosis and Coronary Heart Disease*, New York Heart Association, Inc., New York, Jan. 15, 1957, p. 20.

# DOXINE<sup>\*</sup>

## Emulsion

Low in calories; pleasantly orange flavored; no taste fatigue during long-term therapy

Useful *prophylactically or therapeutically* in patients who either show elevation of serum cholesterol or fall into one or more of the following clinical categories: male patients with precordial pain; overweight middle-aged patients

of both sexes; patients with visibly tortuous superficial arteries; patients with elevated blood pressure

*Dosage:* 1 tablespoonful 3 times daily before meals, alone or mixed with liquid or solid foods

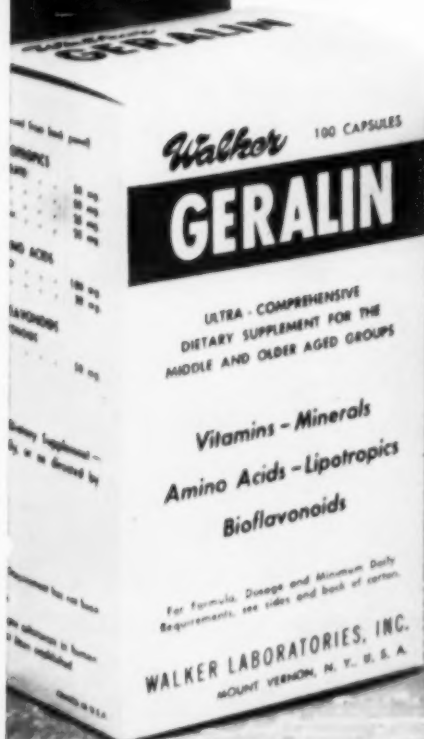
*Supply:* Bottles of 1 pint, each 15 cc. tablespoonful containing 4.5 grams of linoleic acid, 5 mg. of pyridoxine hydrochloride, and 20 mg. of mixed tocopherols as an antioxidant

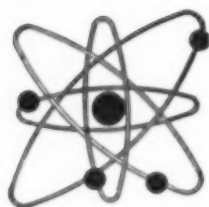
\*TRADEMARK

*To help maintain vigorous  
muscle and nerve tone...  
To improve vascular and  
cerebral vitality...*

SIG: 2 CAPS DAILY

| BOTTLES OF 100 AND 1000.





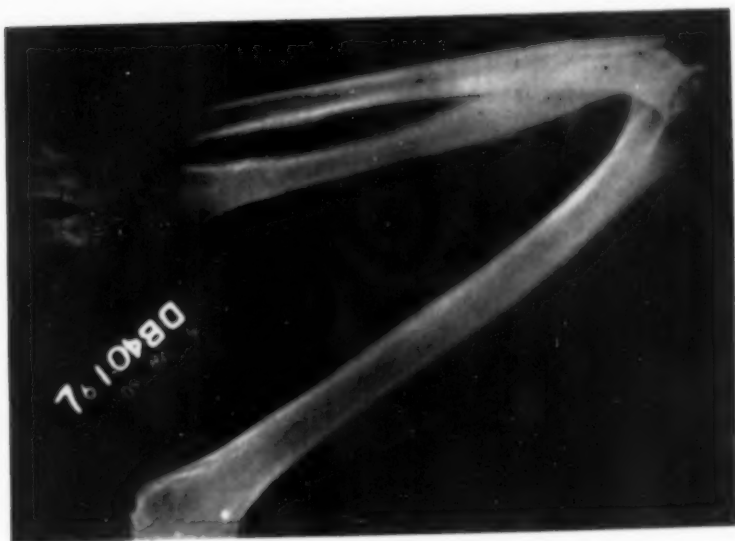
## *Diagnosis, Please!*

Edited by Maxwell H. Poppel, M.D., F.A.C.R., Professor of Radiology,  
New York University College of Medicine and Director of Radiology, Bellevue Hospital Center

### WHICH IS YOUR DIAGNOSIS?

- |           |                               |
|-----------|-------------------------------|
| 1. Scurvy | 3. Tumor                      |
| 2. Lues   | 4. Pulmonary osteoarthropathy |

*Answer on page 170a*





**FOR  
PROMPT, SAFE\*\*  
CONTROL**

**OF  
SPONTANEOUS  
BLEEDING**





## HOW "PREMARIN" INTRAVENOUS CONTROLS BLEEDING

Recent studies by Johnson<sup>1,2</sup> reveal that "PREMARIN" INTRAVENOUS controls bleeding through its effect on three important factors in the coagulation mechanism:

### BASIC COAGULATION MECHANISM

### EFFECT OF "PREMARIN" INTRAVENOUS

#### PROTHROMBIN

in presence of

Calcium ions  
Thromboplastin

#### ACCELERATOR GLOBULIN

is converted to

#### THROMBIN

which activates

#### FIBRINOGEN

to form

#### FIBRIN (clot)

anticoagulation factor

#### ANTITHROMBIN

(inhibits thrombin)

Within 15 minutes, prothrombin concentration is increased.

Marked increase in accelerator globulin is noted within 15 to 30 minutes. Also known as "factor V" and "proaccelerin," accelerator globulin has "enormous influence on the velocity of thrombin formation..."<sup>3</sup>

Simultaneous reduction of antithrombin "increases the amount of potential thrombin available and also tends to make it more effective."<sup>1</sup>

"PREMARIN" INTRAVENOUS has been used effectively to control spontaneous bleeding as in epistaxis, post-tonsillectomy and postadenoidectomy hemorrhage, as well as pre- and post-operatively to minimize bleeding after surgery. "PREMARIN" INTRAVENOUS may be used adjunctively with other therapy.

\* Bleeding was stopped, in more than 80% of 668 cases reported,<sup>4</sup> with one 20 mg. injection of "PREMARIN" INTRAVENOUS.

\*\* Some 400,000 injections of "PREMARIN" INTRAVENOUS have been made to date without a single report of toxicity or production of thrombi.

"PREMARIN" INTRAVENOUS (conjugated estrogens, equine) is supplied in packages containing one "Secule"® providing 20 mg., and one 5 cc. vial sterile diluent with 0.5% phenol U.S.P.

1. Johnson, J. F.: Proc. Soc. Exper. Biol. & Med. 94:92 (Jan.) 1957. 2. Idem: Paper presented at Symposium on Blood, Wayne State Univ., Detroit, Mich., Jan. 18, 1957. 3. Owren, P. A.: Northwest Med. 56:31 (Jan.) 1957. 4. Published and unpublished case reports.

# "PREMARIN" INTRAVENOUS

## The Physiologic Hemostat

safe...for your little patients, too

*"a definite relaxant effect"*<sup>1</sup>

With NOSTYN<sup>®</sup>...almost without exception the children responded by becoming more amiable, quieter and less restless."<sup>1</sup>

*without depression, drowsiness, motor incoordination*

"The most striking feature is that this drug does not act as a hypnotic..."<sup>2</sup> "No toxic side-effects were noted, with particular attention being paid to the hematopoietic system."<sup>2</sup>

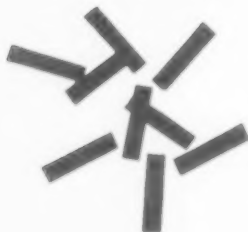
**Dosage:** Children: 150 mg. (½ tablet) three or four times daily. Adults: 150-300 mg. (½ to 1 tablet) three or four times daily.

**Supplied:** 300 mg. scored tablets, bottles of 48 and 500.

(1) Young, C. L.; Chiswick, A. L. and Villa, A. P.; *Sci. West. Hosp. Bull.* 78-80, 1956; (2) Young, C. L.; Chiswick, A. L. and Villa, A. P.; *New York J. Med. Sci.* 1957 (June 15 1957); (3) *Report on Field Research on Nostyn by 69 Physicians in 1,000 Patients*, 1956.



AMES COMPANY, INC. · ELKHART, INDIANA



calmative **nostyn<sup>®</sup>**

Ectylurea, AMES  
(2-ethyl-cis-crotonylurea)

"of value in the hyperactive as well  
as the emotionally unstable child"<sup>3</sup>





## Coroner's Corner

A beautiful imported German apothecary jar will be sent to each contributor of an unusual case report.

A 56-year-old white married male, known to be a heavy drinker, was reported to the local police department as missing for 24 hours. Investigation by the police revealed that he had failed to return from work and a brief check of the local bars failed to indicate the reason for his tardiness. The investigating police officer made a thorough search of the missing man's home but was unable to locate any clues as to his whereabouts. There was no note and no explanation for his disappearance. In searching the home, the police officer noted a ceiling trap door and asked

for a ladder but the man's wife was unable to locate the ladder and the officer did not pursue the search.

After another 24 hours, when a check of the usual bars, hangouts and questioning of his fellow workers and associates failed to offer any help, a statewide bulletin to other police agencies was sent out. By the 3rd day of the disappearance, the distraught wife, demanding greater efforts on the part of the police, was rewarded by a visit from a member of the detective bureau who promised to search the house again. When thorough search again failed to reveal a ladder to the attic, the detective, aided by a table and a chair, gained access to the trap door, locating the ladder in the attic and in addition locating the no longer missing husband, hanging by a stout cord from an attic rafter. A confused and bizarre note found on the body describing the activities of foreign agents bent upon his destruction explained the missing man's flight to the attic and the missing ladder prophylactically pulled up after him to prevent further pursuit. Thus ended an unhappy 3-day search for a man hanging directly above his wife's bedroom.

R.F.R., M.D.  
East Hartford, Conn.



**Now...  
victory over  
infections**

# **MYSTEC**

Squibb Tetracycline Phosphate Complex (Sumycin) and Nystatin (Mycostatin)

**pharmaco-  
dynamically  
superior**



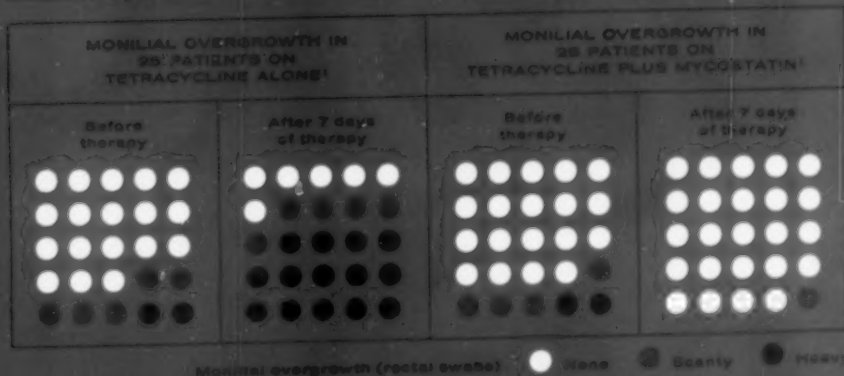
# LIN V

For practical purposes,  
Mysteclin-V is sodium free

With Mysteclin-V you get faster and greater absorption of tetracycline than ever attainable in the past... greater initial concentrations of tetracycline get to the site of the infection more rapidly. And your patients also benefit from a high degree of freedom from annoying or therapy-interrupting side effects.

Supply:	Tetracycline phosphate complex, equiv. to tetracycline HCl (mg.)	Mycostatin (units)	Packaging
Capsules (per capsule)	250	250,000	Bottles of 15 and 100
Half-Strength Capsules (per capsule)	125	125,000	Bottles of 15 and 100
Suspension (per 5 cc.)	125	125,000	2 oz. bottles
Pediatric Drops (per cc.—20 drops)	100	100,000	10 cc. bottles

Contains Mycostatin to forestall monilial overgrowth and possible complications



Mycostatin in Mysteclin-V prevents gastrointestinal monilial overgrowth, thereby minimizing the possibility of antibiotic-induced monilial superinfection.

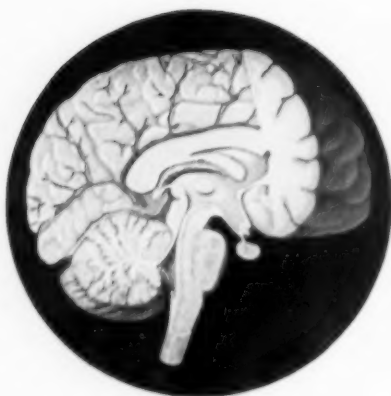
<sup>1</sup> Chiles, A. J.; Britten M. J. 1960 (March) 1959.

SQUIBB



Squibb Quality—the Priceless Ingredient

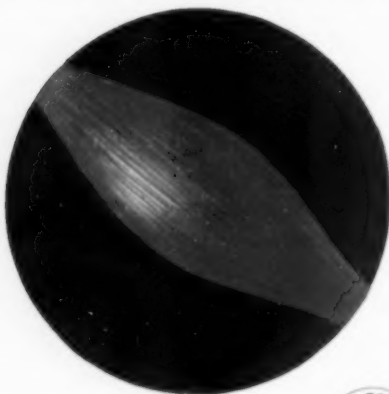
REGISTERED, SERVICE AND INVENTION ARE MARKS OF THE SQUIBB INSTITUTIONS



*For anxiety, tension  
and muscle spasm  
in everyday practice.*

- well suited for prolonged therapy
- well tolerated, relatively nontoxic
- no blood dyscrasias, liver toxicity, Parkinson-like syndrome or nasal stuffiness

**RELAXES BOTH MIND AND MUSCLE  
WITHOUT IMPAIRING MENTAL OR PHYSICAL EFFICIENCY**



## Miltown®

*tranquilizer with muscle-relaxant action*

2-methyl-2-(4-propyl-1,3-propanediol  
dicarbamate — U. S. Patent 2,724,720

*Supplied:* 400 mg. scored tablets  
200 mg. sugar-coated tablets

*Usual dosage:* One or two  
400 mg. tablets t.i.d.

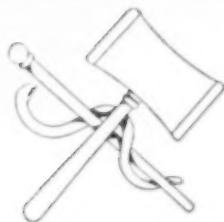
*Literature and samples available on request*



**WALLACE LABORATORIES**  
New Brunswick, N. J.



CM-5113



## What's Your Verdict?

Edited by Ann Picinich, Member of the Bar of New Jersey

A young woman consulted her physician for treatment of severe chest pains. After a series of x-rays, the physician diagnosed the ailment as a nonfunctioning and diseased gall bladder, and advised an operation for its removal. The operation was successful, but the patient suffered pulmonary complications resulting in a collapsed lung which she attributed to the postoperative negligence of the physician.

In a malpractice action against the physician, the patient contends that the medical standard of care in the community requires turning and coughing the patient every two hours after a gall bladder operation. Upon the physician's own testimony, after upper abdominal surgery the abdominal muscles are painfully used and the tendency exists to breathe shallowly. This continued habit may result in a partial filling of the lung cells and an eventual collapse of the lung. Deep breathing and coughing tends to loosen the accumulated matter and aid in using the full capacity of the lung. Consequently, the medical standard of physicians would require coughing and turning somewhere between every two hours, the routine maximum standard, and every six hours, the minimum standard.

The physician makes the defence that he left orders at the hospital for regular turning and coughing as well as for other treatment and medication. If such orders were not carried out, the failure to do so was the responsibility of the hospital personnel. Therefore, there was no breach of medical standard by the physician.

Further, there was no showing by expert testimony that the condition complained of was the result of the alleged negligence.

The hospital record does not show that the patient was turned and coughed as often as once every two hours, but it does indicate services rendered which necessarily involved movements of the abdomen and chest. Such included giving shots, baths and enemas; "being made comfortable;" and being catheterized. Eighteen of such services were performed in a period of forty-three hours.

The trial court dismissed the action for insufficient evidence, and plaintiff appealed. Plaintiff contends that so long as there is some evidence, lay or expert, upon which a finding of negligence could be made, the case should go to the jury.

*(Verdict on page 1964)*



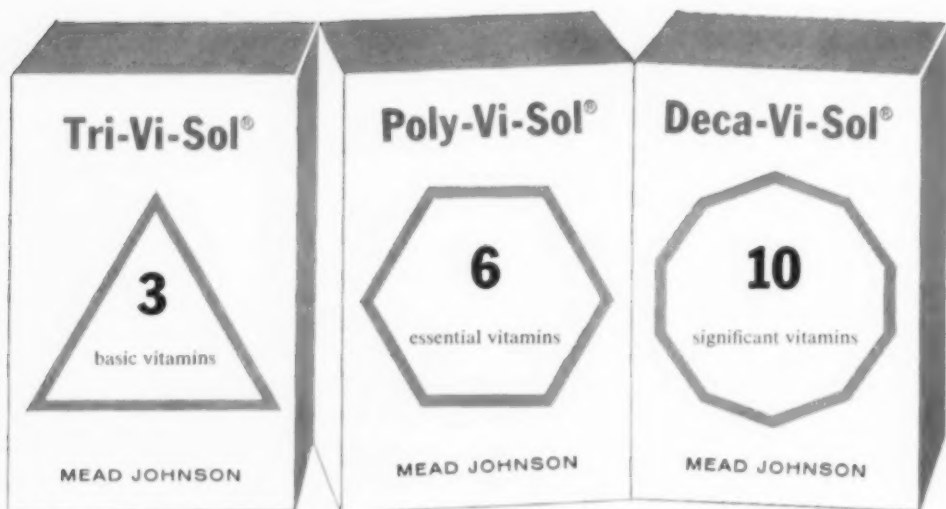
MEAD JOHNSON

SYMBOL OF SERVICE IN MEDICINE

select the level of vitamin protection each infant needs

## the Vi-Sol Vitamin Family

Dropper dosage



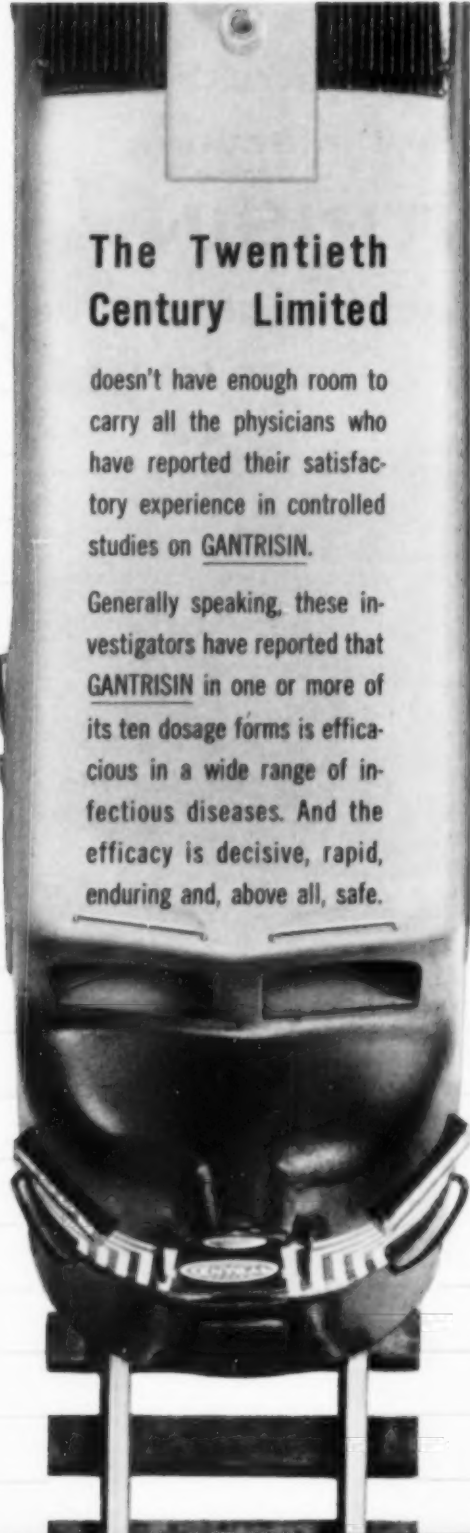
With the new improved taste of Poly-Vi-Sol and Deca-Vi-Sol, now all three have the "best-taste-yet." In Deca-Vi-Sol special process assures stable B<sub>12</sub> in solution with C.

Pleasant fruit-like flavor • hypoallergenic • stable  
• require no refrigeration



unbreakable plastic 'safti-dropper'





## The Twentieth Century Limited

doesn't have enough room to carry all the physicians who have reported their satisfactory experience in controlled studies on GANTRISIN.

Generally speaking, these investigators have reported that GANTRISIN in one or more of its ten dosage forms is efficacious in a wide range of infectious diseases. And the efficacy is decisive, rapid, enduring and, above all, safe.

Gantrisin  
with a plus

→  
Azo Gantrisin

**in urinary tract infections**

**AZO GANTRISIN** 'ROCHE'

**prompt, specific action against pain  
and infection . . . in one tablet**

**ACTION:**

Azo Gantrisin is an antibacterial-analgesic agent specifically designed for treatment of urinary tract infections. The high plasma and urine levels of Gantrisin act systemically and locally to clear both descending and ascending infections. Painful burning, urgency and nocturia are relieved — often within 2 hours — by the analgesic action of phenylazo-diamino-pyridine HCl upon the mucosa of the lower urinary tract.

**USES:**

For antibacterial therapy and local pain relief in urinary tract infections; prevention of infection after cystoscopy, catheterization and other instrumentation. Also useful after urologic surgery.

**ADVANTAGES:**

Wide antibacterial spectrum . . . high plasma levels . . . high urine levels . . . high solubility (even in acid urine) . . . no need for alkalis . . . no likelihood of renal blocking . . . local pain relief.

**DOSAGE:**

Adults (and children over 100 lbs) — 2 tablets, q.i.d.  
Children under 100 lbs — 1 tablet, q.i.d.

**Caution:** The usual precautions in sulfonamide therapy should be observed. Because Azo Gantrisin contains phenylazo-diamino-pyridine HCl, it is contraindicated in glomerular nephritis, pyelonephritis of pregnancy with gastrointestinal symptoms, severe hepatitis and uremia. In such cases, Gantrisin should be used alone.

**SUPPLIED:**

Red, monogrammed tablets, each containing 0.5 Gm Gantrisin plus 50 mg phenylazo-diamino-pyridine HCl; bottles of 100 and 500 tablets.

Gantrisin — brand of sulfisoxazole



HOFFMANN - LA ROCHE INC • NUTLEY • N. J.

# In Skeletal Muscle Spasm



"... Disipal is an orally effective and safe antispasmodic drug. Results are prompt, and gratifying to the patient. The number of office visits... is reduced significantly. The dosage schedule is simple, and side actions are minimal..."

Finch, J.W.: Clinical Trial of Orphenadrine (Disipal) in Skeletal Muscle Disorders. To be published.

# Disipal

Brand of Orphenadrine HCl

## ADVANTAGES

- Speedy relief of muscle spasm
- Orally effective
- Relatively long-acting
- Minimal side actions
- Mildly euphoric
- Nonsoporific
- Tolerance no problem
- No known organic contraindications
- Economical

## INDICATIONS

### Parkinsonism

- Muscle spasm due to
  - Sprains
  - Strains
  - Herniated intervertebral disc
  - Fibrositis
  - Low back pain
  - Whiplash injuries
  - Noninflammatory rheumatic and arthritic states
  - Torticollis

# In Parkinsonism

"In a series of 176 patients... a valuable adjunct to therapy... a highly selective action... that cannot be duplicated by any other current remedy... effective as a euphoriant... and as an energizing agent against weakness, fatigue, adynamia, and akinesia... potent action against sialorrhea, diaphoresis, oculogyria, and blepharospasm... also lessens rigidity and tremor... harmless... minimal side-reactions... safe... even in cases complicated by glaucoma."



Dashay, L.J., and Constable, K.: Treatment of Paralysis Agitans with Orphenadrine (Disipal) Hydrochloride: Results in One Hundred Seventy-Six Cases, *L.A.M.A.*, 16:1332 (Apr. 13) 1957.

**Dosage:** 1 tablet (50 mg.) t.i.d. In Parkinsonism, when used in combination with other drugs, smaller dosage may suffice.

**Riker**

101 ANGLIS

calmer days...more restful nights



beginning first day of treatment

# Nembu-Serpin<sup>®</sup>



The synergistic action of Nembutal<sup>®</sup> and reserpine in Nembu-Serpin helps avoid prolonged waiting for a cumulative response to reserpine alone. Makes lower reserpine dosages effective . . . reduces incidence of side effects. Each Nembu-Serpin Filmtab combines 30 mg. Nembutal Calcium and 0.25 mg. reserpine.

*for milder cases...for maintenance therapy*

Half-strength Nembu-Serpin combines 15 mg. Nem-

<sup>®</sup>Filmtab—Film Sealed tablets, Abbott  
<sup>®</sup>Nembutal—Pentobarbital, Abbott

Abbott

# In Head Colds

and allergic rhinitis, sinusitis, nasopharyngitis

## Total Area Decongestion

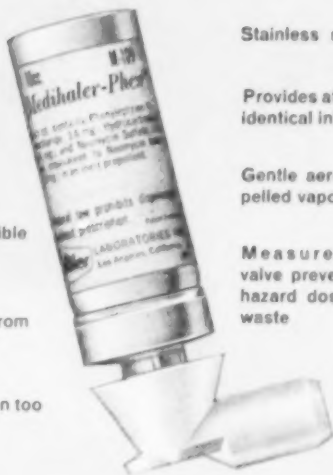
Actual  
Vest-Pocket Size

Shatterproof,  
leakproof,  
spillproof

Tissue-compatible  
medication

Maximal effect from  
small dosage

Safe for children too



Stainless steel vial

Provides at least 200  
identical inhalations

Gentle aerosol-propelled  
vapor

Measured-dose  
valve prevents hap-  
hazard dosage and  
waste

Sterilizable, removable  
unbreakable plastic nasal  
adapter

# Medihaler-Phen™

MEASURED-DOSE NASAL AEROSOL NEBULIZATION

**Effective . . . Safe . . . 4-Pronged Attack**

- VASOCONSTRICTIVE
- ANTI-INFLAMMATORY
- DECONGESTIVE
- ANTIBACTERIAL

Each cc. contains phenylephrine HCl 3.6 mg., neomycin sulfate 1.5 mg. (equivalent to 1.0 mg. of neomycin base), and hydrocortisone 0.6 mg., suspended in an inert, nontoxic aerosol vehicle.



ANOTHER

**Riker**

FIRST

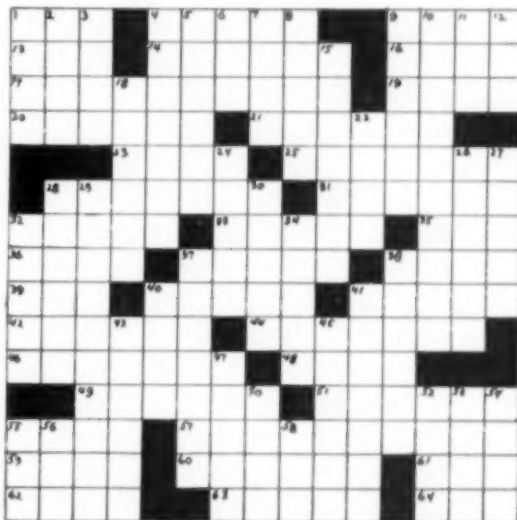
# Medical Teasers

A Challenging Crossword Puzzle for the Physician

(Solution on page 208a)

## ACROSS

1. The yellowish substance of adipose tissue
4. Change to conform to new conditions
9. A soothing application
13. Of each
14. A variety of herpes
16. Prefix signifying equality (pl.)
17. Hernia of Descemet's membrane through the cornea
19. Constant modes of action of forces
20. Basophile elastin
21. Main arterial trunk (pl.)
23. A protection
25. Nonfermentable sugar from berries of *Pyrus aucuparia*
28. Efficacy
31. Pertaining to the spleen
32. Blackness (prefix)
33. Custom
35. Suffix used to form commercial and chemical names
36. West Indian shrub from which indigo is made
37. Tell a lie about; Colloq. (2 wds.)
38. Ultimate unit
39. Shortened slang name for a smoke
40. Molluscum contagiosum
41. Apparatus for holding a hernia in place
42. One who runs away secretly
44. Die
46. Conference
48. Fake
49. Malarial fever
51. Inserted; Fr. word from which supernumerary is derived
55. Circle around the female nipple
57. Pepsins changed by heat
59. Burden
60. Having much hair
61. Disease from alcoholic poisoning; Abbr.
62. Vascular pedicle of a flap
63. Looser
64. Acted upon by a synthetic enzyme (suffix)



Contributed by Mrs. Warren B. King

## DOWN

1. Physiognomy
2. —'s Operation for Aneurysm; ligation on the cardiac side close to the aneurysm
3. A nervous disease of Siberia
4. Antibody stimulant
5. Ethyl morphin hydrochlorate
6. Part of a circle
7. Appeal
8. End (pl.) (comb. form)
9. Instrument for extracting vesical calculi through the urethra
10. Like a tinkling sound (3 wds.)
11. Depressed
12. Manuscripts (Abbr.)
15. Crystalline substance from blood serum
18.  $C_2H_2O_2$
22. Powdered mixture of medicinal substance with lactose (Abbr.)
24. Split (comb. form)
26. Food preparation con-

- sisting of 80% of casein and 20% of albumose
27. Chemical substances (Abbr.)
28. Pertaining to male organ of copulation
29. Excessive congenital thinness of the limbs
30. An alkaloid from bark of Andira exalta
32. Fleishy arils of nutmeg
34. Osse
37. Pertaining to induced electric currents
38. Pleasant odors
40. When you are sick you can —good to anybody (2 wds.)
41. One who gathers pelts for a living
43. Hairy
45. Milk product
47. Wood-tar saponified with potash-lye
50. The body
52. Killing (Suffix)
53. Explosive (pl.)
54. Being
55. — nail Liver of Laennec's cirrhosis
56. Of each
58. Contagious, pustular, eruptive disease



**For winter sore throats, a more potent antibiotic troche**

# **TETRAZETS**

BACITRACIN TYROTHRINICIN NEOMYCIN BENZOCAINE TROCHES

It's the time of year when people crowd together and sore throats spread. For these mixed bacterial throat infections, **TETRAZETS** troches provide continuing local therapy. The 3 potent antibiotics in **TETRAZETS** have a low index of toxicity and sensitization. Each **TETRAZETS** troche contains zinc bacitracin 50 units, tyrothricin 1 mg., neomycin sulfate 5 mg., and anesthetic benzocaine 5 mg.



**MERCK SHARP & DOHME**

DIVISION OF MERCK & CO., INC. PHILADELPHIA 1, PA.





Only a short while ago withdrawn and angry at the world, now social and alert once more. Her schoolwork had dropped off alarmingly, she became morose, unkempt and shunned her fellow students. Because of these symptoms of mental disease or difficulties, Pacatal was instituted: 25 mg. t.i.d. Pacatal therapy saved this girl from a more serious breakdown.

## *"You wouldn't have recognized Nancy"*

**For patients on the brink** of psychoses, Pacatal provides more than tranquilization. Pacatal has a "normalizing" action; i.e., patients think and respond emotionally in a more normal manner. To the self-absorbed patient, Pacatal restores the warmth of human fellowship . . . brings order and clarity to muddled thoughts . . . helps querulous older people return to the circle of family and friends.

**Pacatal in contrast** to earlier phenothiazine compounds and other tranquilizers, does not "flatten" the patient. Rather, he remains alert and more responsive to your counselling. But, like all phenothiazines, Pacatal should not be used for the minor worries of everyday life.

**Pacatal has shown fewer side effects** than the earlier drugs; its major benefits far outweigh occasional transitory reactions. Complete dosage instructions (available on request) should be consulted.

*Supplied:* 25 and 50 mg. tablets in bottles of 100 and 500. Also available in 2 cc. ampuls (25 mg./cc.) for parenteral use.

*back from the brink with*

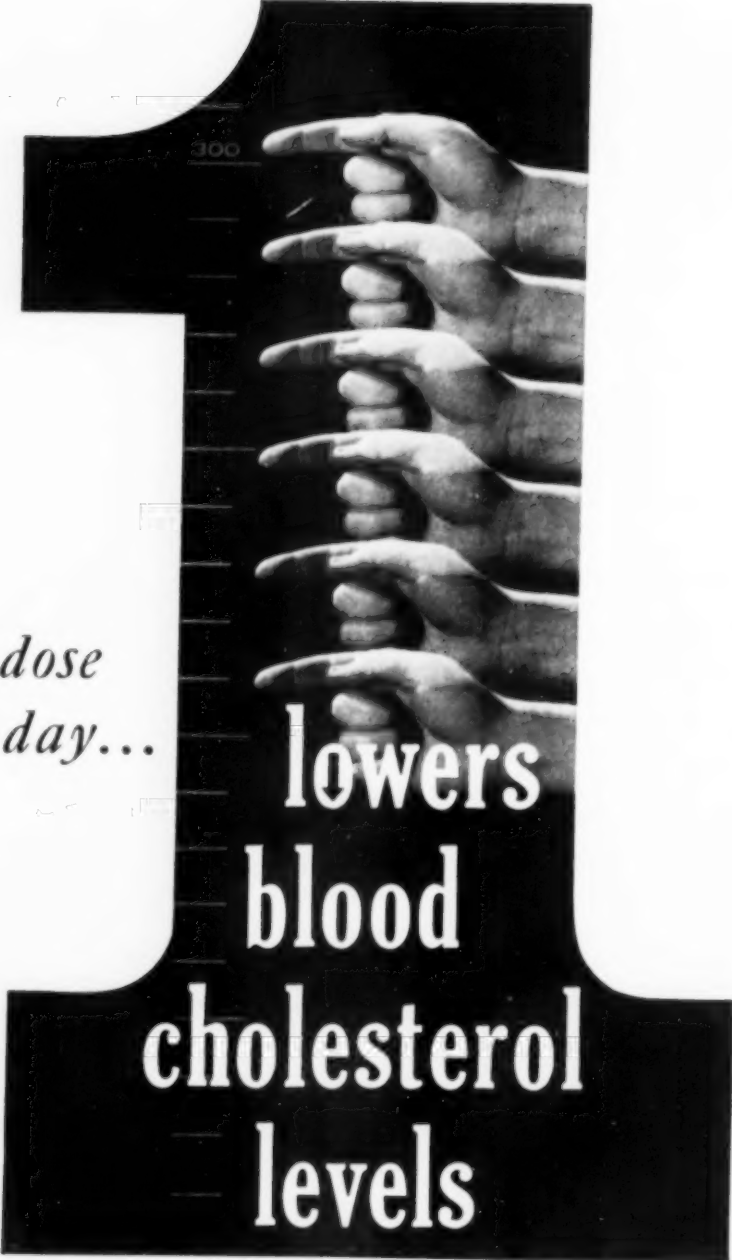
# **Pacatal®**

Brand of mepazine

**WARNER-CHILCOTT**  
100 YEARS OF SERVICE TO THE MEDICAL PROFESSION



*one dose  
a day...*



**lowers  
blood  
cholesterol  
levels**

announcing...  
a new practical  
and effective method  
for lowering blood  
cholesterol levels...

## Arcofac

Just one dose a day effectively  
lowers elevated blood cholesterol  
... while allowing the patient  
to eat a balanced ... nutritious ...  
and palatable diet

Each tablespoonful of emulsion contains:

Linoleic acid.....	6.8 Gm.
Vitamin B <sub>6</sub> .....	0.6 mg.
Mixed tocopherols (Vitamin E).....	11.5 mg.

(sodium benzoate as preservative)

Arcofac is effective in small doses  
and is reasonable in cost  
to the patient



**THE ARMOUR  
LABORATORIES**

A DIVISION OF ARMOUR AND COMPANY  
KANKAKEE, ILLINOIS



**Arcofac**

Armour...Cholesterol Lowering...Factor

## IN PATIENTS WITH "ANXIETY-TENSION-FATIGUE"



'Miltown' therapy  
improves the  
capacity to work  
efficiently

In patients with anxiety-tension-fatigue, electromyographic studies have shown that tense skeletal muscles cannot easily be made to stop contracting. This is considered a major cause of their fatigue.

Investigators<sup>1,2</sup> have reported that after a course of 'Miltown' therapy such muscles can be made to relax at will and can therefore more easily recover from fatigue. The authors consider this of great value in improving the individual's capacity to work efficiently.

1. Dickel, H. A., Wood, J. A. and Dixon, H. H.: Electromyographic studies on meprobamate and the working, anxious patient. *Ann. New York Acad. Sci.* **67**:780, May 9, 1957.
2. Dickel, H. A., Dixon, H. H., Wood, J. A. and Shanklin, J. G.: Electromyographic studies on patients treated with meprobamate. *West. J. Surg.* **64**:197, April 1956.



DISCOVERED  
AND  
INTRODUCED  
BY  
WALLACE  
LABORATORIES

Supplied:  
400 mg. scored tablets.  
200 mg. sugar-coated tablets.

DN 5427

Literature and sample available on request.

### Miltown®

*2 methyl-2 propyl-1,5 oxazolidinone*  
U. S. Patent 2,728,720

TRANQUILIZER WITH  
MUSCLE-RELAXANT  
ACTION



WALLACE LABORATORIES, New Brunswick, N. J.

# After Hours

## Collecting Bells

Collecting bells is not only an interesting hobby to me, but also one that my patients have enthusiastically joined. Several years ago, having a few bells that I wanted to display, I built a small metal "tree", so that I could hang the bells on the branches. As the collection of bells grew, so did the tree—for I continued adding branches to the bottom of the tree to hold more bells. Now the "melody tree", placed on a revolving stand in the waiting room of my office, stands some six feet tall and holds a collection of more than five hundred bells.

Part of these my wife and I have obtained from various places we have traveled. However, the majority have been given to me by interested friends and patients.

The bells range in size from one no larger than a man's thumb nail to the large bell that forms the base of the tree.

At the top is an old dinner bell long used by the cook on a local ranch to call the hands to "chow".

There are also a number of old-style sheep and cattle bells from nearby ranches, and a turkey bell or two.

Probably the oldest in the collection is one which has the inscription in Spanish "Viva Jesus, S. Vincente" and the year 1796. It probably came from some monastery.

A large part of the collection is made up of the beautiful, brightly engraved bells of India and Sarna.

A number are souvenir bells with the state seals.

The bells exhibit a variety of interesting shapes—human, animal, birds, and fish.

Bronze is the most popular material for bells, but some are made of clay, ceramic pottery, silver, iron, or pewter.

LOUIS F. HAMILTON, M.D.  
Artesia, New Mexico

Photographs with brief description of your hobby will be welcomed. A beautiful imported German apothecary jar will be sent to each contributor.



now "... care of the man  
rather than merely his stomach."

"**Milpath**"

Miltown® + anticholinergic

controls

**gastrointestinal dysfunction**  
at cerebral and peripheral levels

tranquilization without  
barbiturate loginess

spasmolysis without  
belladonna-like side effects

for duodenal ulcer • gastric ulcer • intestinal colic  
spastic and irritable colon • ileitis • esophageal spasm  
G. I. symptoms of anxiety states

prescribe:

1 tablet t.i.d. at  
mealtime and  
2 at bedtime

"**Milpath**"

Formula:

Miltown (meprobamate)  
400 mg. (2-methyl-5-m-  
propyl-1,3-propanediol  
dicarbamate)  
U. S. Patent 2,724,728  
triethylethyl iodide 25 mg.  
(3-diethylaniline-1-cyclohexyl-  
1-phenyl-1-propionyl-ethiodide)

Wolf & Wolf, Human Gastric Function

**WALLACE LABORATORIES** New Brunswick, N. J.

Literature and samples on request

# WHY SENSITIZE

*in topical and ophthalmic infections*

# USE 'POLYSPORIN'<sup>®</sup>

POLYMYXIN B-BACITRACIN OINTMENT brand

*to insure broad-spectrum therapy  
with minimum allergenicity*

For topical use: in ¼ oz. and 1 oz. tubes.

For ophthalmic use: in ¼ oz. tubes.



BURROUGHS WELLCOME & CO. (U.S.A.) INC., Tuckahoe, N. Y.



"...it is imperative to treat all urinary tract infections in children as a serious disease, one that may involve the renal parenchyma and produce renal failure in adult life."



*"an effective  
urinary  
antibacterial agent  
in children."*

## FURADANTIN®

brand of nitrofurantoin

In children, since "chronic urinary infection is generally the sequel of inadequately treated acute infection,"<sup>2</sup> prompt and adequate therapy with FURADANTIN can prevent irreparable renal damage. FURADANTIN also "has been a safe and effective therapeutic and prophylactic drug for chronic urinary tract infection. . . . We feel the drug should be continued prophylactically for a minimum of several months after the urine has been sterilized."<sup>1</sup>

In addition to unexcelled effectiveness against a wide range of gram-positive and gram-negative bacteria, FURADANTIN has a wide margin of safety. Excellently tolerated, FURADANTIN has proven nontoxic to kidneys, liver and blood-forming organs. No cases of monilial superinfection, crystalluria, or staphylococcal enteritis have ever been reported. In 6 years of extensive use, development of bacterial resistance remains negligible.

**AVERAGE FURADANTIN DOSAGE:** FURADANTIN Oral Suspension (25 mg. per 5 cc. tsp.): Average daily dose for children is 5 to 7 mg. per Kg. (2.3 to 3.2 mg. per lb.) in 4 divided doses. Administered with food or milk, it is readily miscible with water, infants' formulae, milk or fruit juices.

Supplied: Oral Suspension, bottle of 60 cc.

Tablets, 50 mg. and 100 mg., bottles of 25 and 100.

**REFERENCES:** 1. Marshall, M., Jr., and Johnson, S. H., III.: *J. Urol.*, Balt. 76:123, 1956.  
2. Johnson, S. H., III., and Marshall, M., Jr.: *A. M. A. Am. J. Dis. Child.* 89:199, 1955.  
3. Campbell, M. F.: *Modern Med.* 24:55, 1956.



NITROFURANS . . . a new class of antimicrobials . . .  
neither antibiotics nor sulfonamides

EATON LABORATORIES, NORWICH, NEW YORK

# NOW...BREAK THE SHACKLES OF BRONCHOSPASM WITH NEW CHOLARACE

(Trademark)

**Formula:** (in the coating) 20 mg. racephedrine HCl, 27.5 mg. pentobarbital, (in the core) 200 mg. choline theophyllinate (Choledyl®).

**Indications:** Bronchospasm associated with or due to asthma, hay fever, emphysema, bronchitis, bronchiectasis, and to pulmonary infections in general.

**Average dosage:** Adults, 1 tablet every 3 to 4 hours. Children, 10 to 15 years of age, 1 tablet every 4 hours.

**Supply:** 100, 500 tablets

The excellent clinical results obtained with Cholarace are based on the superiority of each of its three components. Choledyl is *better tolerated* than oral aminophylline. Racephedrine produces *less CNS stimulation* than ephedrine. Pentobarbital has *faster and shorter action* than phenobarbital.



NEPERA LABORATORIES DIV.  
Morris Plains, New Jersey

CFA-2064



in  
allergic  
eczemas

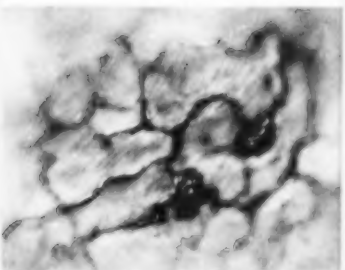
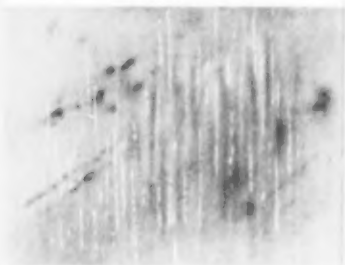
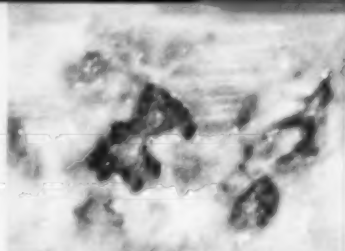
**Meti-Derm CREAM 0.5%**

(METICORTELONE, free alcohol)

**Meti-Derm OINTMENT 0.5%**  
with Neomycin

each in 10 Gm. tubes

*Schering*



**excellent response in eczematous dermatoses**

## **Meti-Derm CREAM 0.5%**

(METICORTEZONE, free alcohol)

water washable—stainless

benefits allergic dermatoses, usually without irritation

## **Meti-Derm OINTMENT 0.5%** with Neomycin

5 mg. METICORTEZONE and 5 mg. Neomycin Sulfate  
advantageous when infection is present or suspected

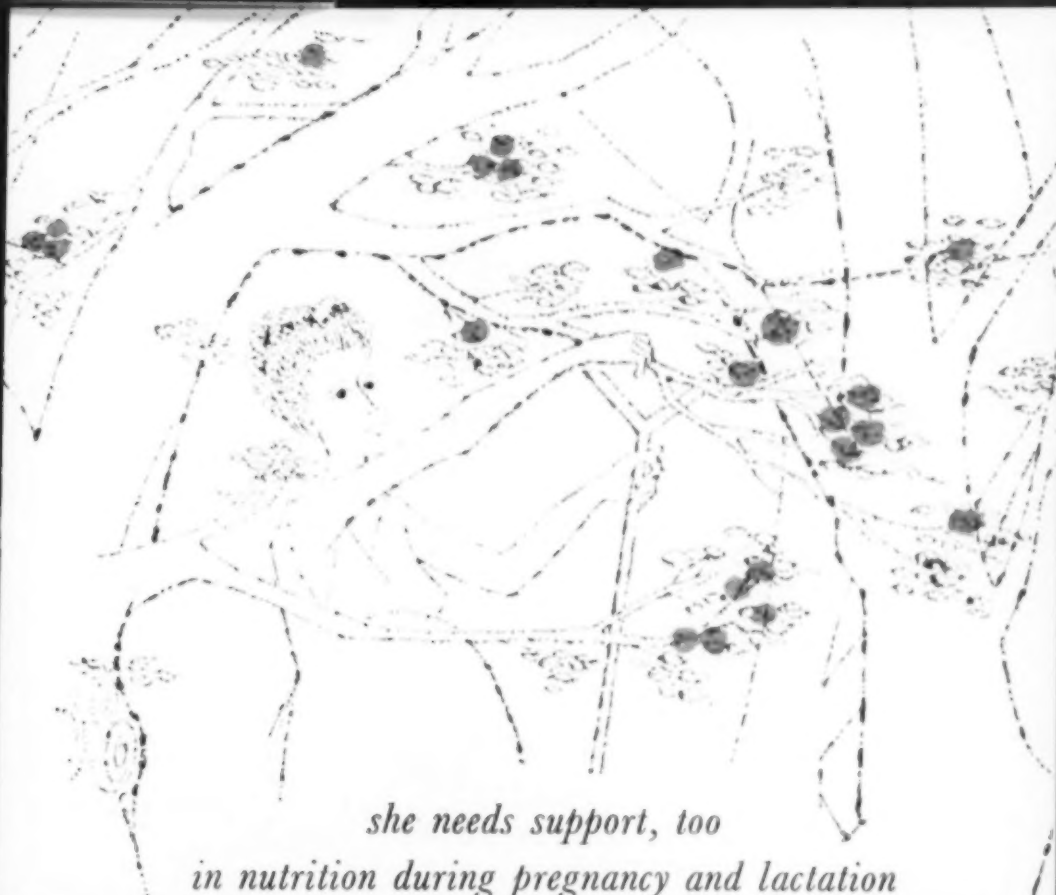
Each in 10 Gm. tubes

Meti-Derm,\* brand of prednisolone topical.  
METICORTEZONE,® brand of prednisolone.

\*T.M.

MS-2-217

*Schering*



*she needs support, too  
in nutrition during pregnancy and lactation*

# NATABEC<sup>®</sup> KAPSEALS<sup>®</sup>

Vitamin-mineral combination

She protects herself by taking the NATABEC Kapsicals prescribed by her physician. NATABEC supplements good table fare to help promote better present and future health for the mother and her child.

each NATABEC Kapsical contains:

Calcium carbonate	600 mg.	Synkacin <sup>®</sup> (vitamin K)	
Ferrous sulfate	150 mg.	(as the hydrochloride)	0.5 mg.
Vitamin D	400 units	Flotin	10 mg.
Vitamin B <sub>1</sub> (thiamine)		Nicotinamide (niacinamide)	10 mg.
mononitrate	5 mg.	Vitamin B <sub>2</sub> (pyridoxine hydrochloride)	3 mg.
Vitamin B <sub>2</sub> (riboflavin)	2 mg.	Vitamin C (ascorbic acid)	50 mg.
Vitamin B <sub>12</sub> (crystalline)	2 mcg.	Vitamin A	4,000 units
Folic acid	1 mg.	Intrinsic factor concentrate	5 mg.

**dosage** As a supplement during pregnancy and throughout lactation, one or more Kapsicals daily. Available in bottles of 100 and 1,000.



PARKE, DAVIS & COMPANY  
DETROIT 32, MICHIGAN

00004

*hypersensitivity to  
animal dander...  
pollens...house dust  
...drugs...  
foods...molds...*



*allergies...  
respond to*

**CLISTIN<sup>®</sup>**

Carbinoxamine Maleate

Tablets Clistin, 4 mg.  
Tablets Clistin R-A  
(Repeat Action Tablets),  
8 mg.  
Elixir Clistin, 4 mg.  
per 5 cc.

\*Johnson, H. J., Jr.:  
Am. Pract. & Digest. Treat.  
3:862 (Nov.) 1954.

**CLISTIN**

for "effective control of allergic symptoms  
with little risk of sedation"<sup>\*</sup>

**Dosage Schedule For Children:**

1 to 3 years—2 mg.  $\frac{1}{2}$  t.i.d.  
3 to 6 years—2 to 4 mg.  $\frac{1}{2}$  or q.i.d.

**Dosage Schedule For Adults:**

mild to moderate symptoms: 4 mg.  
severe symptoms: 6 to 8 mg.

**McNEIL**

LABORATORIES, INC., Philadelphia 32, Pa.

## Who Is This Doctor?

HE was born in London in October 1795. When he was 9 years old, his father died, and the remainder of his education was pursued under severe financial restriction. At school he did extensive reading, especially on mythology, and started a translation of the *Aeneid*.

♦ ♦ ♦

When he was 15, his mother, to whom he was strongly attached, died of consumption. His guardian decided that he should study medicine. As was customary in those days, he was apprenticed to a surgeon for a period of four years. During these years he made his first efforts at writing poetry.

♦ ♦ ♦

He entered medical school at Guy's Hospital in October, 1815, and passed his examination before the Apothecaries Society in July 1816. His real inclinations, however, were beginning to show strongly; in 1816-17 he gave up surgery in favor of poetry.

♦ ♦ ♦

In 1816, he wrote the sonnet "On First Looking Into Chapman's Homer," the first poem in which he unmistakably establishes his creative gift.

♦ ♦ ♦

In April, 1817 he began to work on "Endymion" which was published in

1818. In the summer of the same year he went on a walking tour of Scotland where the extreme exertion and exposure had an unfavorable effect upon his health; his life was not to last much longer. Later in the year, he spent days and nights at the bedside of his brother who, in December, died of tuberculosis.

♦ ♦ ♦

At this time, he met Fanny Brawne, fell in love with her. His illness, however, prevented their marriage.

♦ ♦ ♦

In February, 1820, he became seriously ill. On the way to Italy he wrote his last poem "Bright Star."

♦ ♦ ♦

On December 10, he had a final relapse and died in Rome on February 23, 1821. Shelley paid homage to his lamented young friend in "Adonais."

♦ ♦ ♦

"Till the Future dares  
Forget the Past, his fate and fame  
shall be  
An echo and a light unto eternity!"

♦ ♦ ♦

"... Peace, peace! he is not dead  
he doth not sleep—  
He hath awakened from the dream  
of life."

♦ ♦ ♦

*Can you name the doctor? Answer on page 132a.*



## **KOAGAMIN<sup>®</sup>**

parenteral hemostat

**controls and prevents blood loss**

*Saves patients* from the necessity of transfusion in many cases,<sup>1</sup> by providing rapid, safe\* hemostasis systemically. Avoids transfusion hazards (death 1:1000 to 1:3000, jaundice 1:200).<sup>2</sup>

*Saves blood* in various types of hemorrhage...safely...by acting directly on the last phases of the clotting mechanism.

*Saves time* in office and operating room by stemming capillary and venous bleeding and preventing hemorrhage.

1. Joseph, M.: Control of Hemorrhage—or Transfusion, *Am. J. Surg.* 87:905, 1954. 2. Crisp, W. E.: Editorial; One Pint of Blood, *Obst. & Gynec.* 7:216, 1956. KOAGAMIN, an aqueous solution of oxalic and malonic acids for parenteral use, is supplied in 10-cc. diaphragm-stoppered vials.

\*no untoward reaction—including thrombosis—ever reported in 18 years of clinical use.

CHATHAM PHARMACEUTICALS, INC. • NEWARK 2, NEW JERSEY



Distributed in Canada by Austin Laboratories, Limited, Guelph, Ontario



RING BELL  
AND  
WALK IN

She returns to report . . .  
full antacid benefits

**-no  
antacid  
penalties**

After you prescribe ALUDROX, you can expect to enter such a report as this in your follow-up record: "Acid neutralization free of drawbacks." For ALUDROX avoids systemic or other handicaps. It avoids laxation (its content of milk of magnesia is right). It avoids constipation (its content of aluminum hydroxide is right). It avoids alkalosis. It avoids acid rebound. And it solves the problem of taste resistance.

In short, ALUDROX outmodes trouble-making antacids. Fresh-flavored, smooth-textured, it encourages patient co-operation. Its formula (one part milk of magnesia, four parts aluminum hydroxide) is the choice of many physicians for fast and prolonged acid neutralization, constipation-inhibiting action, and soothing protection. ALUDROX keeps antacid trouble out of your practice.

TABLETS

SUSPENSION

**ALUDROX**

Aluminum Hydroxide with Magnesium Hydroxide



Philadelphia 1, Pa.

to neutralize,  
not penalize

# Metrazol

## ORAL



**In Senility, Geriatrics, Convalescence,  
Fatigue States, Debility.**

**DOSE:** 1 or 2 tablets or tea-  
spoonfuls METRAZOL  
Liquidum three or four  
times a day, starting with  
the larger dose for the  
first few weeks.

Metrazol®, brand of Pentylene-  
tetrazol, a product of E. Bilhuber,  
Inc.

**KNOLL PHARMACEUTICAL CO.**

Orange, New Jersey

## LETTERS TO THE EDITOR

This department is offered as an Open Forum for the discussion of topical medical issues. All letters must be signed. However, to protect the identity of writers who are invited to comment on controversial subjects names will be omitted when requested.

### **Guillotine Snare In Anal Surgery**

An acute, pedunculated hemorrhoidal mass or short fistula (as shown) may be easily removed with a large size Daniels type tonsillotome.

In both conditions a beveled edge wound results with no tendency to bridging.

*Technique Tips:* (1) Generous infil-

—Continued on page 429



MEDICAL TIMES



# gone!

...another  
case  
of  
anorexia

Turn "eat-like-bird" patients into chow hounds with STIMAVITE TASTITABS. Each of the five STIMAVITE factors improves appetite and (in children) promotes growth.

each STIMAVITE TASTITAR contains:

<i>L</i> -lysine . . . . . 15 mg.	Vitamin B <sub>1</sub> . . . 10 mg.
Vitamin B <sub>12</sub> . . . 20 mcg.	Vitamin B <sub>6</sub> . . . 3 mg.
Vitamin C (as sodium ascorbate) . . . . . 25 mg.	

STIMAVITE TASTITABS taste good too: swallowed as a tablet, chewed like candy, or dissolved in liquids.

Bottles of 30 and 100. Dosage is usually one or two STIMAVITE TASTITABS daily, with meals.

stimavite the appetite" with

**STIMAVITE® TASTITABS®**



New York 17, New York



**used by 50 million  
passengers of the  
world's greatest airline!**

During much of the world's history, the announcement of another safe arrival was often accompanied by storm warnings in the area of artificial feeding for the newborn infant.

The problems of digestive disturbances in infants were a prime concern of medical science. Working, progressing, medical research eventually determined that one of the most satisfactory solutions to bottle-feeding problems was evaporated milk.

Since that time, more than 50 million babies have been raised on evaporated milk formulae . . .

more than 50 million times, Captain Stork's passengers have made the transition from happy landings to happy growing.

Still today, evaporated milk is unique in its combination of advantages for bottle feeding—a level of protein sufficient to duplicate the growth effect of human milk . . . flexibility . . . maximum nutritional value . . .

and all this at *minimum* cost.



**PET EVAPORATED MILK . . . backed by  
72 years of experience and continuing research**

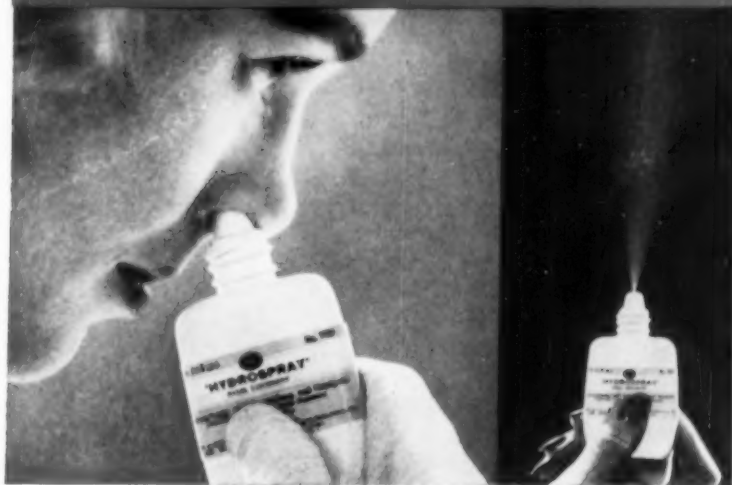
**PET MILK COMPANY • ARCADE BUILDING • ST. LOUIS 1, MO.**

# 'Hydrospray' NASAL SUSPENSION

(HYDROCORTONE® WITH PROPADRINE® AND NEOMYCIN)

*Anti-inflammatory—  
Decongestant—Antibacterial*

**MAJOR ADVANTAGES:** New synergistic anti-inflammatory, decongestant and antibacterial formula. High steroid content assures effective response.



Topically applied hydrocortisone<sup>1</sup> in therapeutic concentrations has been shown to afford a significant degree of subjective and objective improvement in a high percentage of patients suffering from various types of rhinitis. Hydrospray provides Hydrocortone in a concentration of 0.1% plus a safe but potent decongestant, Propadrine, and a wide-spectrum antibiotic, Neomycin, with low sensitization potential. This combination provides a three-fold attack on the physiologic and pathologic manifestations of nasal allergies which results in a degree of relief that is often greater and achieved faster than when any one of these agents is employed alone.

**REFERENCE:** 1. Silcox, L. E., *A.M.A. Arch. Otolaryng.* 60:431, Oct. 1954.

**INDICATIONS:** Acute and chronic rhinitis, vasomotor rhinitis, perennial rhinitis and polyposis.

**SUPPLIED:** In squeezable plastic spray bottles containing 15 cc. Hydrospray, each cc. supplying 1 mg. of Hydrocortone, 15 mg. of Propadrine Hydrochloride and 5 mg. of Neomycin Sulfate (equivalent to 3.5 mg. of neomycin base).



**MERCK SHARP & DOHME**  
DIVISION OF MERCK & CO., INC.  
PHILADELPHIA 3, PA.

## LETTERS TO THE EDITOR

—Continued from page 56a

tration anesthesia is used, (2) instrument is applied with the sharp blade well retracted and visible to operator at all times—not next to the patient, (3) the crushing or very dull blade closest to the patient must be tight enough to crush but not to sever the tissue, (4) most important, the instrument must so remain for a continuous half hour of controlled curiosity before ———, (5) the sharp blade is sent through very slowly to microscopically tear rather than cut the tissue free, thus further insuring a truly bloodless result. The patient is immediately up and about wearing sanitary belt and pad.

9810 East Park Avenue

Edward A. Hackie, M.D.  
9810 East Park Avenue  
Bellflower, California

## After Hours

I received the copy of *MEDICAL TIMES* (containing my hobby) and thought that you did a very good arrangement of the two pictures. I have shown it to several friends and patients.

Besides I enjoy and read *MEDICAL TIMES*.

C. P. Groom, M.D.  
Pocotello, Idaho

## Enjoy MT

I enjoy looking through your magazine. It seems to me to be a model of careful and imaginative editing—in addition to the excellence of its contents.

Jules V. Coleman, M.D.  
New Haven, Conn.

... Your journal combines the good features of many of our popular journals. It is well edited and contains material which is welcome to the G.P.

N. W. L., M.D.  
Hammond, Indiana

when anxiety and tension "erupts" in the G. I. tract...

## IN GASTRIC ULCER



## PATHIBAMATE\*

Meprobamate with PATHILON® Lederle

*Combines Meprobamate (100 mg.) the most widely prescribed tranquilizer... helps control the "emotional overlay" of gastric ulcer—without fear of barbiturate loginess, hangover or habituation... with PATHILON (25 mg.) the anticholinergic noted for its extremely low toxicity and high effectiveness in the treatment of many G.I. disorders.*

*Dosage:* 1 tablet i.i.d. at mealtime, 2 tablets at bedtime.

*Supplied:* Bottles of 100, 1,000.



\*Trademarks

\*Registered Trademark for Food & Drug Administration

LEDERLE LABORATORIES DIVISION, AMERICAN CYANAMID COMPANY, PEARL RIVER, NEW YORK



# THE COUGH THAT DIDN'T MAKE THE NEWS

his physician prescribed

**BENYLIN®**  
EXPECTORANT

BENYLIN EXPECTORANT contains  
in each fluidounce:

Benadryl® hydrochloride (diphenhydramine hydrochloride, Parke-Davis) . . . . .	80 mg.
Ammonium chloride . . . . .	12 gr.
Sodium citrate . . . . .	5 gr.
Chloroform . . . . .	2 gr.
Menthol . . . . .	1/10 gr.
Alcohol . . . . .	5%

**supplied:** BENYLIN EXPECTORANT  
is available in 16-ounce  
and 1-gallon bottles.



PARKE, DAVIS & COMPANY • DETROIT, MICHIGAN



DRY, SCALY SKIN  
DETERGENT RASH  
SUNBURN  
SIMPLE ECZEMA  
DIAPER RASH  
'DISHPAN' HANDS  
PRICKLY HEAT  
CHAFING

Superficial skin complaints usually respond dramatically to  
**TASHAN CREAM 'Roche'**

Antiprurient, soothing, and healing—contains vitamins A, D, E, and *d*-Panthenol, in a cosmetically pleasing water-soluble base which fastidious patients will enjoy using. Hoffmann-La Roche Inc., Nutley, N. J.

TASHAN<sup>®</sup>





## Mediquiz

*These questions are from a civil service examination recently given to candidates for physician appointments in municipal government. Like to see how you would fare? Answers will be found on page 210a.*

1. Syncope following physical exertion suggests: (A) adrenal cortical adenoma; (B) pheochromocytoma; (C) islet cell adenoma of pancreas; (D) thyroid adenoma.

2. Crooke's hyalinization of cells is commonly associated with: (A) diabetes mellitus; (B) lupus erythematosus; (C) Cushing's syndrome; (D) acromegaly.

3. Acrocyanosis is a disturbance of the: (A) hemoglobin; (B) capillary bed; (C) platelets; (D) red cells.

4. The one of the following which is the best treatment for causalgia is: (A) rhizotomy; (B) chordotomy; (C) sympathectomy; (D) lobotomy.

5. To sympathectomize the lower extremities successfully, one must: (A) remove lumbar ganglions 1-2-3; (B) remove lumbar ganglions 3-4-5; (C) section sympathetic trunk between dorsal ganglions 8-9; (D) remove ganglion chain from D6 to L5.

6. A patient has a hard mass in the thyroid and osseous metastasis which show moderate uptake of radioactive iodine. The optimum treatment in this case is: (A) total thyroidectomy and

systemic radioactive iodine therapy; (B) total thyroidectomy and irradiation of the metastasis; (C) irradiation of the gland and the metastasis; (D) systemic radioactive iodine therapy alone.

7. The one of the following with which Paget's disease of the bone (osteitis deformans) is most commonly associated is: (A) elevated serum calcium and diminished serum phosphorus; (B) elevated alkaline phosphatase; (C) elevated non-protein nitrogen; (D) reversal of the albumin globulin ratio.

8. A bullet that may have grazed or perforated the ascending colon before lodging within the spinal canal has caused paraplegia. The one of the following which you would choose as the first measure in treatment is: (A) laminectomy for removal of bullet; (B) observation for 24 hours; (C) exploratory laparotomy; (D) antibiotic therapy for 24 hours.

9. A small pupil, ptosis of the upper eyelid and enophthalmos (Horner's syndrome) indicate a spinal nerve root lesion at a vertebral level of: (A) cervical 1-2; (B) cervical 4-5; (C) cervical

*—Continued on page 63a*

**ASYMPTOMATIC / ALERT**



*Presently Accepted Antihistamine Groups*

**GROUP 1** • low potency / low sedation

**GROUP 2** • moderate potency / moderate sedation

**GROUP 3** • high potency / high sedation

*And now . . . Ayerst announces  
a new group in antihistamines*

**GROUP 4** HIGH POTENCY  
LOW SEDATION

**“THERUHISTIN”<sup>®</sup>**

Brand of Isothipendyl hydrochloride

**single drug therapy with dual objective—  
patients remain *asymptomatic and alert***

“THERUHISTIN” was effective in 92 per cent of 602 cases studied.\* Good to excellent response was obtained in 80 per cent and fair in an additional 12 per cent. Average effective dosage was only 8 mg. daily. Duration of activity was about six hours per dose. Drowsiness was reported in only 0.8 per cent (5 patients).

In effect, only 1 out of every 100 patients reported drowsiness in the above study.

**DOSEAGE:** Adults, 1 tablet or 2 teaspoonfuls (4 mg.) two to four times daily. Children, 1/2 to 1 teaspoonful, or 1/4 to 1/2 tablet (1 to 2 mg.) two to four times daily, depending on age and symptomatology.

**SUPPLIED:** Tablets, 4 mg., bottles of 100 and 1,000. Syrup, 2 mg. per 5 cc. (tsp.), bottles of 16 fluidounces.

**Ayerst<sup>®</sup> AYERST LABORATORIES** New York, N. Y. • Montreal, Canada

\*New and Unused Therapeutics Committee, Am. Coll. Allergists: Interim Report at Thirteenth Annual Congress, Mar. 20-22, 1957, Chicago, Ill., Ann. Allergy, to be published.

5768

not an antacid  
not an antispasmodic  
not an anticholinergic  
not a sedative

but

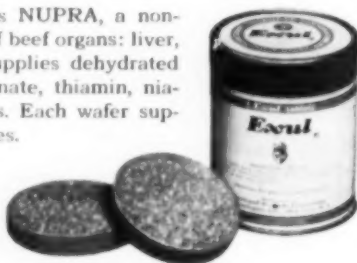
A NEW NUTRITIONAL TREATMENT FOR PEPTIC ULCER

# Exul<sup>®</sup>

- relieves symptoms in a few days
- heals ulcers within one to three weeks
- heals in the presence of acid
- has no side effects

EXUL's principal ingredient is NUPRA, a non-hormonic, non-steridic extract of beef organs: liver, brain, adrenals. EXUL also supplies dehydrated cream and milk, ferrous gluconate, thiamin, niacinamide and flavoring extracts. Each wafer supplies approximately 135 calories.

EXUL is supplied in hermetically-sealed tins containing 5 wafers. *Dosage* is 5 wafers or less daily, depending on the severity of the case.



YORKTOWN PRODUCTS CORP., 441 LEXINGTON AVE., NEW YORK 17, N. Y.

# In Impetigo and other topical infections<sup>†</sup>



## NEO-POLYCYN<sup>\*</sup>

(PITMAN-MOORE)

... provides three preferred topical antibiotics, *neomycin*, *polymyxin* and *bacitracin* in the unique Fuzene<sup>®</sup> (polyethylene glycol diester) base ... which releases *more* neomycin, *more* polymyxin and *more* bacitracin than do ordinary grease-base ointments.

<sup>†</sup>Clinically effective in pyoderma, folliculitis, paronychia, sycosis barbae, and also secondary bacterial infections complicating treatment of burns, eczemas, contact dermatitis, seborrhea, acne, psoriasis, varicose ulcers and neurodermatitis.

<sup>\*</sup>Trademark

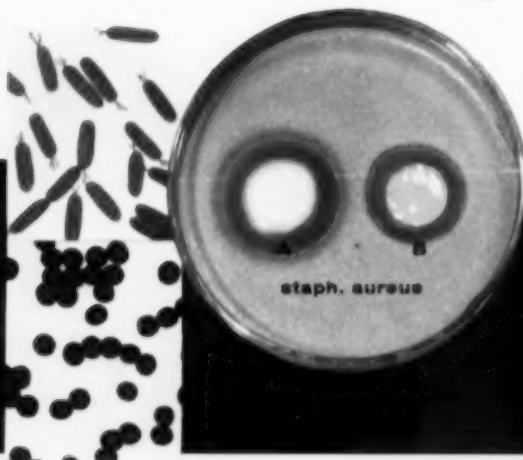
Miscibility of Neo-Polycin in aqueous medium means greater release of antibiotics into lesions.



Poor miscibility permits only limited release of antibiotics from grease-base ointments.



## visual evidence of GREATER ANTIBIOTIC RELEASE by NEO-POLYCIN



staph. aureus

The greater release of antibiotics from Neo-Polycin results in greater antibacterial effect. Compare the zones of inhibition created by (A) Neo-Polycin, and (B) by a topical antibiotic ointment in a grease-base.

**NEO-POLYCIN** is effective against the entire range of bacteria commonly found in cutaneous lesions. It diffuses readily into tissue exudates, and is active in the presence of blood and pus. Neo-Polycin has an extremely low index of sensitization, and is nonirritating to tissue.

Each gram of Neo-Polycin Ointment contains 3 mg. of neomycin, 8000 units of polymyxin B sulfate and 400 units of bacitracin in the unique Fuzene base. Supplied in 15 Gm. tubes. (Also supplied as Neo Polycin-HC, containing 1% hydrocortisone acetate, in 5 Gm. tubes.)

Neo-Polycin and Neo Polycin-HC ophthalmic ointments (anhydrous, lanolin-petrolatum base) are supplied in 1/4 oz. tubes.

**PITMAN-MOORE COMPANY**

Division of Allied Laboratories, Inc.

INDIANAPOLIS 6, IND.



**symptomatic relief...plus!**



**Achrocidin\***

TETRACYCLINE-ANTIHISTAMINE ANALGESIC COMPOUND

ACHROCIDIN is a well-balanced, comprehensive formula for treating acute upper respiratory infections.

Debilitating symptoms of malaise, headache, pain, mucosal and nasal discharge are rapidly relieved.

Early, potent therapy is offered against disabling complications to which the patient may be highly vulnerable, particularly during febrile respiratory epidemics or when questionable middle ear, pulmonary, nephritic, or rheumatic signs are present.

ACHROCIDIN is convenient for you to prescribe—easy for the patient to take. Average adult dose: two tablets, or teaspoonfuls of syrup, three or four times daily.

## tablets

ACHROMYCIN® Tetracycline	125 mg.
Phenacetin	120 mg.
Caffeine	30 mg.
Salicylamide	150 mg.
Chlorthal Etrate	25 mg.

*Bottle of 24 tablets*

## syrup

*Each teaspoonful (5 cc.) contains:*

ACHROMYCIN® Tetracycline	equivalent to tetracycline HCl	125 mg.
Phenacetin		120 mg.
Salicylamide		150 mg.
Ascorbic Acid (C)		25 mg.
Pyridamine Maleate		15 mg.
Methylparaben		4 mg.
Propylparaben		4 mg.

*Available on prescription only*

LEDERLE LABORATORIES DIVISION, AMERICAN CYANAMID COMPANY, PEARL RIVER, NEW YORK

\*Reg. U. S. Pat. Off.

**Lederle**



**AGE . . .** In older people, chronic constipation and biliary dyspepsia are often the result of decreased food and water intake, inactivity, intestinal muscle atonicity, increased anorectal disorders, biliary stasis.

## for biliary dyspepsia and constipation

**OCCUPATION . . .** Among the sedentary workers, chronic constipation and impaired digestion are often the result of lack of exercise which retards normal peristaltic action in the gastrointestinal tract.



Tablets of Caroid and Bile Salts with Phenolphthalein are specifically formulated to provide a 3-way, comprehensive approach to the problem of impaired digestion and elimination.

1. **CHOLERETIC**
2. **DIGESTANT**
3. **LAXATIVE**

Bile salts stimulate biliary flow for improved fat emulsification while Caroid steps up protein digestion up to 15%. Gentle stimulant laxatives induce formed, easily passed stools.

For patients who cannot or will not be managed by diet and exercise, Caroid and Bile Salts helps establish normal physiological patterns.

*samples available on request*

AMERICAN FERMENT COMPANY, INC., 1450 BROADWAY, NEW YORK 18, N. Y.

**CAROID® AND BILE SALTS** *Tablets*



7—thoracic 1; (D) thoracic 3-4.

10. The diagnosis of bladder neck obstruction due to benign or malignant enlargement of the prostate gland is best established by: (A) a cystogram; (B) urethroscopy; (C) a rectal digital examination; (D) determination of amount of residual urine.

11. The anatomical structure usually involved in the production of a direct inguinal hernia is: (A) Poupart's ligaments; (B) conjoint tendon; (C) external oblique fascia; (D) transversalis fascia.

12. The popliteal artery can be acutely occluded in the 6th decade and: (A) there is no danger of gangrene; (B) gangrene develops in 100 per cent of cases; (C) gangrene develops in two-thirds of cases; (D) gangrene develops in one third of cases.

13. Congenital arteriovenous fistulas of the forearm at times are accompanied by increased growth of the hand. This is most probably due to the fact that: (A) collateral arterial blood supply is stimulated by the fistulae and over-nourishes the part; (B) increased venous pressure distal of the fistulae influences growth; (C) oxygen uptake by tissues distal to the fistulae is increased; (D) oxygenated blood is diverted into the venous system and nourishes the part by retrograde flow.

14. The age specific death rate for accidental death for males and females in the United States is highest in the age group: (A) 5 through 14 years; (B) 15 through 24; (C) 25 through 44; (D) 65 years and older.

15. Following a "head cold," a young

man complains of slight dyspnea and a harassing cough productive of  $\frac{1}{2}$  1 cup of non-foul, occasionally blood-streaked green mucopurulent sputum daily. Examination of the chest reveals scattered wheezes and rhonchi from apices to bases over both lung fields anteriorly, posteriorly and in the axillae. The chest X-ray is negative. The probable diagnosis of this illness is: (A) viral pneumonia; (B) acute tracheobronchitis; (C) bronchial asthma; (D) disseminated tuberculosis.

16. A young policeman complains of low grade fever, malaise, headache and increasing asthenia for one week. Physical examination shows a temperature of  $101^{\circ}\text{F}$ , and hypertrophy of lymphoid tissue in posterior pharynx with generalized lymphadenopathy. The liver edge is palpable and tender and the edge of the spleen is palpable and tender. There is no icterus. The diagnosis of this illness is most likely to be: (A) infectious mononucleosis; (B) Hodgkins disease; (C) acute leukemia; (D) infectious hepatitis.

17. Amebic hepatitis is best treated by: (A) needle aspiration of liver and injection of emetine hydrochloride; (B) open surgical drainage; (C) radiation X-ray therapy; (D) chloroquine therapy.

18. A 55-year-old-man complains of easy fatigue, night sweats, weight loss of two weeks duration. Examination of blood reveals 3,000 white blood cells per cubic millimeter; 3,000,000 red blood cells per cubic millimeter; hemoglobin of 12.5 Gm./100 cc.; diminished

—Continued on page 73a



## *Introducing*

### **A New Dimension in Therapy of Chronic Disorders**

In chronic "fatigue," malnutrition, anorexia, the menopause, premenstrual tension —

In arthritis, ulcerative colitis, neoplasms, certain dermatoses, delayed wound healing —

*depression and discouragement are frequent concomitants which may magnify symptoms and hinder recovery.*

WHENEVER DEPRESSION AND APATHY ARE PART OF THE PICTURE, *MARSILID* IS UNPARALLELED IN ITS PSYCHIC EFFECT. *MARSILID* IS NEITHER A "TRANQUILIZER" NOR A PSYCHOMOTOR STIMULANT IN THE USUAL SENSE. IT POSSESSES UNIQUE PSYCHODYNAMIC ACTIVITY, WITH A REMARKABLE POTENTIAL FOR RESTORING THE JOY OF LIVING TO DEPRESSED AND DEVITALIZED INDIVIDUALS.

... FOR EXAMPLE: In rheumatoid arthritis, "the first response" of patients treated with MARSILID "was a gradual increase in their generalized sense of well-being. Patients who formerly were depressed began to smile faintly, to show interest in their immediate surroundings, and presently to note an improvement in appetite. Many patients commented that they were beginning to feel as they had before they developed rheumatoid arthritis. Although joint pain and swelling were still present, these joint manifestations appeared to be tolerated better and were less a cause for concern. . . ."

Scherbel, A. L.: Cleveland Clinic Quarterly 24:90 (April) 1957

*the psychic energizer*

# MARSILID

(iproniazid)

'Roche'

Unlike the usual psychomotor stimulants, Marsilid induces a feeling of healthy well-being rather than fleeting euphoria, does not produce motor restlessness or irritability, does not depress but usually stimulates appetite, does not elevate but may lower blood pressure. In malnutrition and delayed wound healing, it appears to have anabolic effects. Marsilid is an isopropyl derivative of isonicotinic acid hydrazide, an amine-oxidase inhibitor with apparently unique effect as a regulator of serotonin and other neurotropic enzyme activity.

For complete references and information concerning dosage, indications, and contraindications, write V. D. Mattia, Jr., M.D., Director of Medical Information, Hoffmann-La Roche Inc., Nutley 10, New Jersey.

MARSILID® PHOSPHATE — brand of iproniazid phosphate

Supplied in scored tablets of 50 mg, 25 mg and 10 mg

 *Original Research in Medicine and Chemistry*

# sick of eating



## ...sick after eating

"Mealtime doldrums" (nausea, lack of appetite, gastrointestinal distress, dyspepsia, weakness and fatigue) are symptomatically consistent with biliary stasis. More than replacement therapy (bile salts) is needed. A copious flow of highly fluid bile—hydrocholeresis—promptly drains the biliary tree and clears away sluggish bilious matter, relieves irritation, and prevents infection of the bile ducts. Hydrocholeresis restores the physiologic supply of natural bile *from within* and achieves laxation without catharsis. Dehydrocholic acid is the most potent hydrocholeretic and the least toxic of the bile derivatives.

Spasmolysis is rapidly and effectively achieved by homatropine methylbromide which has been proved notably safe in the new, higher dosage of five milligrams.

Cholan V, a combination of dehydrocholic acid and homatropine methylbromide, affords prompt relief from symptoms of hepato-biliary insufficiency and spasm, and helps maintain adequate bile fluidity—especially indicated in dyspepsia, obesity, pregnancy, and alcoholism.

## new Cholan V

Each tablet contains 250 mg. Cholan DH® (dehydrocholic acid Maltbie) and 5 mg. homatropine methylbromide. One or two tablets t.i.d., after meals. Bottles of 100, 500, and 1,000.

Hydrocholeresis is contraindicated in jaundice and in complete bile duct obstruction.

Also available:

**Cholan DH®** (250 mg. dehydrocholic acid);

**Cholan HMB** (250 mg. dehydrocholic acid, 2.5 mg. homatropine methylbromide,  $\frac{1}{8}$  gr. phenobarbital).

Write for free sample supply to Professional Service Department.

MALTBIE LABORATORIES DIVISION

WALLACE & TIERNAN, INC.



Belleville 9, New Jersey

PCN-71

number of platelets, occasional nucleated red cells and less than 1 per cent immature white cells. The one of the following diagnoses which is most unlikely is: (A) pernicious anemia in relapse; (B) aleukemic leukemia; (C) lupus erythematosus disseminatus; (D) multiple myeloma.

19. A 55-year-old male, who has worked in the quarries of Barre, Vermont, complains of dyspnea, marked peripheral edema and palpitations during the past three months. Examination reveals cyanosis, hepatomegaly, sinus tachycardia, fibrosis of the lungs and an elevated venous pressure. Treatment for this patient should include: (A) no oxygen; (B) quinidine to relieve the tachycardia; (C) digitalization; (D) a high carbohydrate diet.

20. The most useful of the following tests in the diagnosis of a suspected case of disseminated lupus erythematosus would be: (A) examination of the urine; (B) examination of the bone marrow; (C) examination of the blood for cold agglutinins; (D) erythrocyte sedimentation test.

21. The one of the following which does not occur in a patient receiving cortisone or corticotropin is: (A) peptic ulcer; (B) psychosis; (C) retention of potassium; (D) glycosuria.

22. Of the following, the one which is not a collagen disease is: (A) Hodgkin's disease; (B) lupus erythematosus disseminatus; (C) dermatomyositis; (D) scleroderma.

23. Recurrence of acute gout is best prevented by regular administration of small doses of (A) cinchophen; (B)

colchicine; (C) salicylates; (D) benemid.

24. The one of the following drugs which is useful in the treatment of myasthenia gravis is: (A) curare; (B) neostigmine; (C) cortisone; (D) quinine.

25. The one of the following which is most helpful in establishing the diagnosis of polycystic renal disease is: (A) retrograde pyelogram; (B) asymptomatic uremia for a period of years; (C) family history of polycystic renal disease; (D) palpation of masses in both flanks.

26. The longest periods of survival with uremia are usually seen in patients with: (A) chronic glomerulonephritis; (B) polycystic renal disease; (C) intercapillary glomerulosclerosis; (D) unilateral atrophic pyelonephritis.

27. Systolic hypertension is commonly seen in association with: (A) coarctation of the aorta; (B) acute glomerulonephritis; (C) sclerosis of the aorta; (D) pheochromocytoma.

28. A "paradoxical pulse" is usually caused by: (A) cardiac tamponade; (B) myocardial infarction; (C) cardiac decompensation; (D) auricular fibrillation.

29. A "paradoxical pulse" is characterized by: (A) a faster rate during inspiration than during expiration; (B) a faster rate during expiration than during inspiration; (C) diminished force or absence during inspiration; (D) inequality of rates at the cardiac apex and radial artery.

30. Of the following agents, the one

-Continued on page 76a

Clinical benefits  
well established in

**LOW BACK PAIN**

and other  
musculoskeletal disorders

**flexin<sup>®</sup>**

Zoxazolamine<sup>®</sup>



"...in the treatment of 90 patients with low back pain and other muscular conditions...67 (74 per cent) showed a good response following treatment with Flexin."<sup>1</sup>

"In acute and chronic recurrent low back syndrome, seven of eight patients showed visible objective improvement."<sup>2</sup>

"A high percentage of patients with these conditions [sprains, muscle strains and contusions, low back disorders, fibrositis, bursitis, myositis, and spondylitis] may be expected to be benefited by the drug with attending relief of muscle spasm discomfort."<sup>3</sup>

references (1) Johnson, H. J., Jr.: To be published. (2) Settel, E.: Am. Pract. & Digest Treat. 8:443 (March) 1957. (3) New and Nonofficial Remedies, J.A.M.A. 162:205-207 (Sept. 15) 1956.

how supplied: Pink, enteric coated tablets (250 mg.), bottles of 36. Yellow, scored tablets (250 mg.), bottles of 50.

**McNEIL**

Laboratories, Inc. • Philadelphia 32, Pa.

XXXX

\*U.S. Patent Pending



which produces a persistent increase in plasma volume is: (A) dextran; (B) norepinephrine; (C) dextrose solution; (D) saline solution.

31. The child born of a mother who has had German measles during the last month of pregnancy is very apt to have: (A) congenital cardiac defects; (B) congenital cataract; (C) club foot; (D) none of the foregoing.

32. The one of the following which, in association with rheumatic heart disease, is most suggestive of sub-acute bacterial endocarditis is: (A) prolonged fever; (B) persistent microscopic hematuria; (C) a single blood culture positive for streptococcus viridans; (D) splenomegaly.

33. The largest number of cases developing spider angiomas have been in association with: (A) acute hepatitis; (B) pregnancy; (C) psoriasis; (D) cholelithiasis.

34. In Addison's disease the ingestion of a large amount of water is followed by: (A) poor diuresis; (B) exaggerated diuresis and dehydration; (C) depression of blood glucose; (D) significant elevation of blood pressure.

35. Of the following statements, the one which may be true in very early lobar pneumonia is that: (A) rales are large and numerous; (B) there is egophony; (C) there may be equivocal or no physical signs; (D) there is marked dehydration.

(Answers on page 210a)



**Now**

**Simplified dosage\*  
to prevent  
Angina Pectoris**

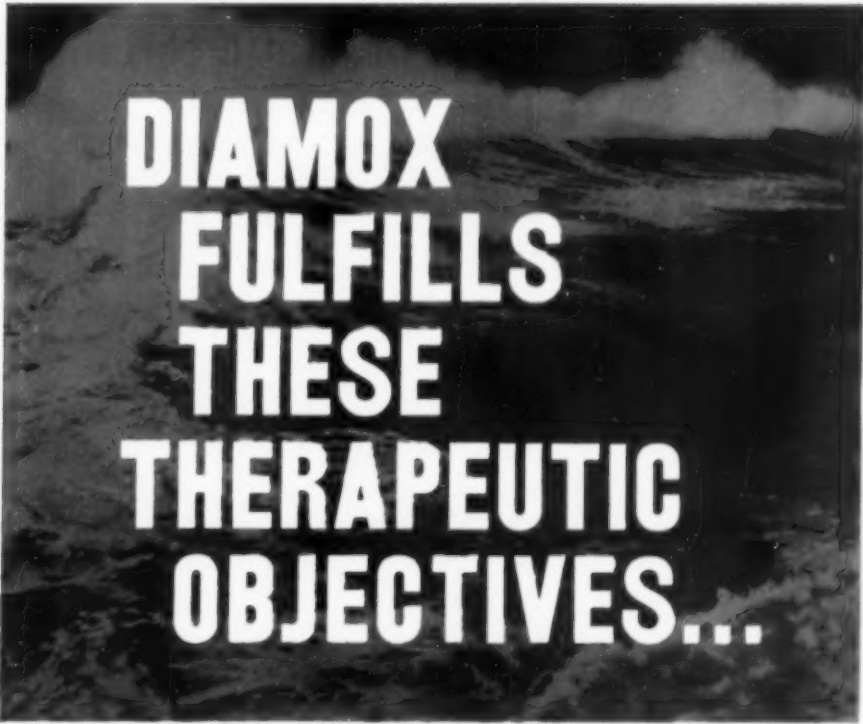
# Metamine®

Triethanolamine trinitrate biphosphate, LEEMING, 10 mg.

# Sustained

\*Usual dose: Just 1 tablet upon arising and one before the evening meal. Bottles of 50 tablets. THOS. LEEMING & Co., INC., 155 East 44th Street, N.Y. 17, N.Y.





# DIAMOX FULFILLS THESE THERAPEUTIC OBJECTIVES...

- Mobilizes edema...prevents fluid accumulation • 6-12 hour diuresis on a single, oral dose • No cumulative effects, excretion within 12-14 hours **With These "Extra"**
- Patient Benefits** • Oral dosage • Convenience of daytime diuresis, nighttime rest • Virtually no serious side effects • Economical

NON-MERCURIAL DIURETIC

## DIAMOX\*

Acetazolamide Lederle

DIAMOX is outstandingly effective in a variety of conditions: cardiac edema, glaucoma, epilepsy, toxemia of pregnancy, obesity with edema, premenstrual tension.

LEDERLE LABORATORIES DIVISION, AMERICAN CYANAMID COMPANY, PEARL RIVER, NEW YORK  
\*Reg. U. S. Pat. Off.



by mouth...by vein...  
palliation achieved in prostatic carcinoma

# STILPHOSTROL®

Diethylstilbestrol Diphosphate, AMES

Tablets • Ampuls

“...easy and safe to give very large doses...”<sup>1</sup>

- Better tolerated than unphosphorylated stilbestrol
- Permits higher doses for more effective palliation
- Benefits patients “...even after other estrogens have failed”<sup>2</sup>
- Relieves pain, reduces urinary symptoms and increases well-being
- Tablets permit initial or maintenance treatment of ambulatory as well as hospitalized patients

1. Flocks, R. H.: J.A.M.A. 163:709 (Mar. 2) 1957.

2. Flocks, R. H.; Marberger, H.; Begley, B. J.,  
and Prendergast, L. J.: J. Urol. 74:549, 1955.

For complete information, write to:  
Medical Department



**AMES**

**COMPANY, INC • ELKHART, INDIANA**

**AMES COMPANY OF CANADA, LTD., TORONTO**

37837



## MODERN MEDICINALS

These brief résumés of essential information on the newer medicinals, which are not yet listed in the various reference books, can be posted on file cards and a record kept. This file can be kept by the physician for ready reference.

**Achromycin V Liquid Pediatric Drops**, Lederle Laboratories Division, American Cyanamid Co., Pearl River, New York. Each cc. (20 drops) contains 100 mg. Achromycin V (tetracycline buffered with sodium metaphosphate). Indicated for combatting Gram positive and Gram negative infections in infants and children. **Dose:** As directed by physician. **Sup:** Plastic dropper bottles of 10 cc.

**Albumisol**, Merck Sharp & Dohme, Division of Merck & Co., Inc., Philadelphia 1, Pennsylvania. Parenteral, composed of 5% normal serum albumin (human) and 25% salt-poor. Indicated to regulate the volume of circulating bloods in shock, burns, hemorrhage, etc. **Use:** As directed by physician. **Sup:** Vials of 50cc./25%, 250cc./5%.

**B-Denose**, B. F. Ascher & Co., Kansas City, Missouri. Injectable, each cc. of which contains 25 mg. adenosine-5-monophosphoric acid 50 mcg. vitamin B<sub>12</sub>, 10 mg. thiamine HCl, 25 mg. nicotinic acid. Indicated for treatment of varicose vein complications such as ulceration, edema, itching, etc., also for intense itching associated with other conditions. **Dose:** 1 cc. administered intramuscu-

larly once or twice daily. **Sup:** Multiple-dose vials of 10 cc.

**Compazine 25 Mg.**, Smith, Kline & French Laboratories, Philadelphia, Pennsylvania. New dosage tablet for the treatment of hospitalized psychiatric patients whose dosage requirements exceed 40 mg. per day. Administration of Compazine in the high-dose regimen as directed by physician. **Sup:** Bottles of 50 and 500.

**Enovid**, G. D. Searle & Co., Chicago, Illinois. Stimulates the endometrium to a luteal phase and is indicated in the following menstrual disorders: primary and secondary amenorrhea, menorrhagia, metrorrhagia, oligomenorrhea, inadequate luteal phase, dysmenorrhea and premenstrual tension. **Dose:** 1 tablet of 10 mg. from day 5 to day 25 of the cycle, except in amenorrhea when Enovid is given for 20 days to establish the first cycle, in metrorrhagia for 10 days to establish the cycle and if ovulation is desired therapy should be initiated on day 15 instead of day 5 of the cycle. **Sup:** Bottles of 50 tablets.

**Enzactin**, Ayerst Laboratories, New York, New York. Cream, each Gm.

—Continued on page 84a

*now 2*  
*palatable*  
*and effective*  
*antidiarrheals*  
*containing*

Carob powder buffers intestinal contents and adsorbs irritant secretions, bacteria, and toxins. Its marked demulcent properties check hyperperistalsis, permitting fluid absorption and rapidly producing formed stools. Carob powder tends to prevent dehydration and loss of electrolytes and the patient can usually be maintained on adequate nutritious diets during treatment.

The high soluble carbohydrate content (mainly fructose) of carob powder provides valuable nutritional support and tends to counteract *diarrhea-induced acidosis*.

## **CAROB POWDER**

*for*  
*prompt*  
*symptomatic*  
*control*



**PITMAN-  
MOORE  
COMPANY**

DIVISION OF  
ALLIED LABORATORIES, INC.  
INDIANAPOLIS 6, INDIANA

## *Carob powder with streptomycin/neomycin*

# INTROMYCIN<sup>TM</sup>

*Carob Powder . . . for prompt relief of diarrhea symptoms*

*Neomycin/Streptomycin . . . for the prevention and treatment of bacterial infections*

*your patients recover more  
rapidly with INTROMYCIN*

### *because*

- formed stools are produced 5 times faster<sup>1</sup>
- water loss is better controlled
- electrolytes are replenished
- bacterial pathogens are inhibited

1. Abella, P.U.: J. Pediatr. 41:82, 1952.

Available in 75 Gram (2½ oz.) bottles.

*Have  
you  
taken  
the*

**INTROMYCIN**  
*taste  
test?*



## *Carob powder without antibiotics*

# AROBON<sup>®</sup>

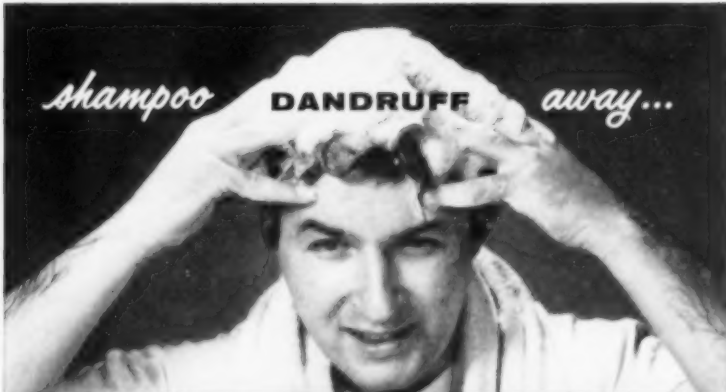
Arobon alone controls most non-specific, uncomplicated diarrheas by physiologic means—without the use of sedatives or narcotics. In infectious diarrheas, it controls the distressing symptoms when used in conjunction with appropriate antibiotic or chemotherapeutic treatment.

Originally introduced as an outstanding antidiarrheal for infants and children, Arobon has proved remarkably efficacious in the treatment of diarrheas of all age groups.

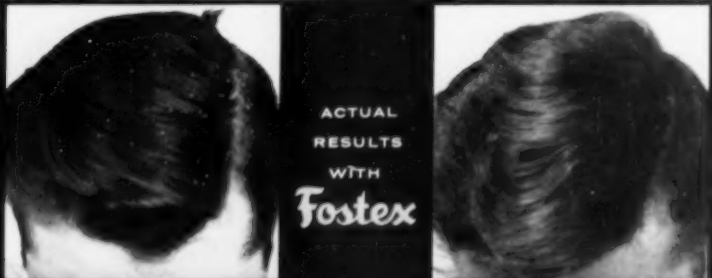
Distributed by Pitman-Moore Company under the trade name AROBON through rights acquired from the trademark owner, the Nestlé Company, Inc.

Available in 5 oz. bottles.

*shampoo* **DANDRUFF** *away...*



**ACTUAL RESULTS WITH Fostex**



Scalp before treatment

Scalp after shampooing with Fostex Cream

## **Fostex**® CREAM

new, effective, easy to use treatment for seborrhea capitis

Fostex Cream is a therapeutic shampoo to rid the "itchy" scaly scalp of dandruff . . . excess oiliness . . . seborrheic dermatitis. Fostex is effective and well tolerated. It does not contain selenium. And . . . the Fostex routine is easy . . . all the patient does is stop using his regular shampoo and start washing his hair and scalp with Fostex Cream. It's a treatment and shampoo all in one.

**Fostex effectiveness** in seborrhea capitis is provided by Sebulytic® (sodium lauryl sulfacetate, sodium alkyl aryl polyether sulfonate, sodium dioctyl sulfosuccinate), a new combination of surface active cleansing and wetting agents with remarkable antiseborrheic, keratolytic and antibacterial action, enhanced by sulfur 2%, salicylic acid 2% and hexachlorophene 1%.

Fostex Cream is also used for therapeutic washing of the skin in acne.



Supplied in 4.5 oz. jars

Write for samples and literature.

*Westwood* PHARMACEUTICALS

Division of Foster-Milburn Co., 467 Dewitt St., Buffalo 13, N.Y.



to try it .....





**fastest acting local anesthetic –  
as safe as it is effective**

**How safe is Xylocaine?** In five years, over 500,000,000 injections of Xylocaine HCl Solution have been given. "The apparent clinical safety of Xylocaine is gratifying, for without this quality, its additional properties would not warrant an enthusiastic report . . . The truth of the matter is, however, that Xylocaine approaches the ideal drug more closely than any other local anesthetic agent we have today."\*

**How effective is Xylocaine?** It produces more rapid, complete, and deeper anesthesia than other local anesthetics used in equivalent doses. It gives a wide area of analgesia. Its long duration of action reduces the need for additional injections.

**....is to use**

## **XYLOCAINE®**

**How does Xylocaine fit into my practice?** For *local infiltration anesthesia*, it is used routinely in minor surgical procedures such as closure of lacerations, removal of cysts, moles, warts; treatment of abscesses; and in the reduction of fractures.

For *therapeutic interruption of nerve function by temporary nerve blocks*, it is used in herpes zoster, subdeltoid bursitis, fibrositis, myalgia of shoulder muscles, and periarthritis due to trauma. The relief of pain in these conditions at times appears to be the most important part of treatment.

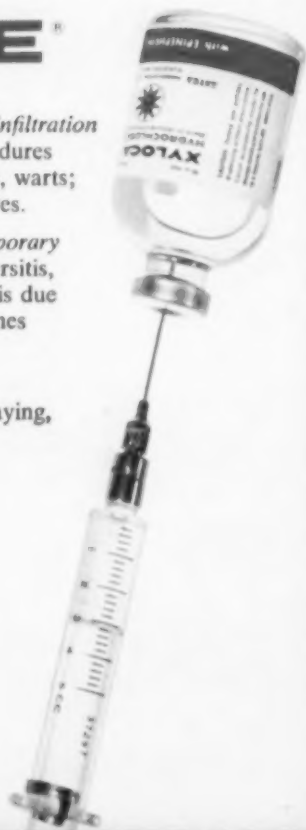
The *topical anesthetic* properties further enhance its usefulness. Topical anesthesia can be obtained by spraying, by applying packs, by swabbing, or by instilling the solution into a cavity or on a surface.

Available in 2 cc. ampuls, 20 cc. and 50 cc. vials, in strengths of 0.5%, 1% and 2%, with or without epinephrine.

Bibliography of approximately 300 references upon request.

\*Southworth, J. L., and Dabbs, C. H.: Xylocaine: a superior agent for conduction anesthesia, *Anesth. & Analg.* 32:159 (May-June) 1953.

**Astra Pharmaceutical Products, Inc., Worcester 6, Mass.**







# RIASOL Standard Regimen for PSORIASIS

Two simple measures—prescribing RIASOL and ordering a low fat diet—will provide the most satisfactory results possible in the treatment of psoriasis.

RIASOL relieves itching immediately. In a matter of weeks the scaliness disappears and the red patches gradually fade away. With continued treatment, recurrence is usually avoided.

RIASOL\* contains mercury 0.45% chemically combined with soaps, phenol 0.5% and cresol 0.75% in a special liquid vehicle that aids penetration of the superficial layers of the epidermis.

RIASOL is convenient, non-staining, and requires no bandages. A thin film is applied every night and rubbed in gently, after bathing and drying the affected skin area. Supplied in 4 and 8 fld. oz. bottles at pharmacies or direct.

\* T. M. Reg. U. S. Pat. Off.



**THOUSANDS of PHYSICIANS are now using RIASOL**

On request, we shall be glad to send you a generous clinical package together with professional literature. No obligation. Write

**SHIELD LABORATORIES**

Dept. MT-957

12850 Mansfield Avenue, Detroit 27, Michigan



Before Use of Riasol



After Use of Riasol

**RIASOL FOR PSORIASIS**

of which contains 250 mg. glyceryl triacetate (triacetin). Indicated for prevention and treatment of superficial dermatophytoses, particularly athlete's foot and ringworm of the scalp. **Dose:** Twice daily as directed by physician. **Sup:** 1 oz. tube.

**Estrosed,** Chicago Pharmacal Company, Chicago, Illinois. Tablets, each containing 0.1 mg. reserpine and 0.01 mg. ethinyl estradiol. Indicated for use in relieving estrogen deficiencies in menopause, hypo-ovarianism, menometrorrhagia and the post-menopausal period. **Dose:** 1 or 2 tablets one to three times a day for one week. Maintenance dosage as directed by physician. **Sup:** Bottles of 100 and 1000.

**Flavinol-C,** Walker Laboratories, Inc., Mount Vernon, New York. Capsules, each containing 200 mg. bioflavonoids and 200 mg. ascorbic acid. Indicated for treatment of all capillary abnormalities. **Dose:** 1 or 2 capsules four times daily, or as indicated by physician. **Sup:** Bottles of 24 and 100.

**Flexilon,** McNeil Laboratories, Inc., Philadelphia, Pennsylvania. Tablets, each containing 125 mg. Flexin zoxazolamine and 300 mg. Tylenol acetaminophen. Indicated for reduction of spasm and relief of pain associated with musculoskeletal disorders. **Dose:** 1 tablet three or four times a day during meals or with food, or as directed by physician. **Sup:** Bottles of 50.

**Gevral T,** Lederle Laboratories Division, American Cyanamid Company, Pearl River, New York. Capsules, containing a balanced combination of 14 vitamins and 11 minerals. Indicated for use when supplemental requirements are exceptionally high. **Dose:** 1

capsule per day. **Sup:** Jubilee jar of 100 capsules.

**Gelfilm Ophthalmic,** The Upjohn Company, Kalamazoo, Michigan. Sterile nonantigenic Gelatin Film for use in certain eye operations. Directions for use accompany each package. **Sup:** Box of 6 sterile 25 x 50 mm. strips in individual envelopes.

**Hydeltrasol Ophthalmic,** Merck Sharp & Dohme, Division of Merck & Co., Inc., Philadelphia, Pennsylvania. Solution, each cc. of which contains 5 mg. prednisolone 21-phosphate, or ointment, each Gm. of which contains 2.5 mg. prednisolone 21-phosphate. Indicated for treatment of various forms of conjunctivitis, iridocyclitis, keratitis, herpes zoster ophthalmicus, corneal ulcers and injuries and blepharitis. **Dose:** As directed by physician. **Sup:** Solution in 2.5 cc. and 5 cc. dropper bottles; ointment in 3.5 Gm. tubes.

**Hydeltrasol Topical,** Merck Sharp & Dohme, Division of Merck & Co., Inc., Philadelphia, Pennsylvania. Lotion, each cc. of which contains 5 mg. prednisolone 21-phosphate. Indicated for various dermatological diseases. **Dose:** 2 or 3 daily applications to the affected area. **Sup:** Plastic squeeze bottles of 1/2 fl. oz.

**Linodoxine,** Pfizer Laboratories, Division of Chas. Pfizer & Co., Inc., Brooklyn, New York. Orange-flavored emulsion, each tablespoonful (15 cc.) of which contains 4.5 gm. linoleic acid and 5 mg. pyridoxine hydrochloride. Indicated to provide improved balance of unsaturated fatty acids thus reducing elevated blood cholesterol levels. **Dose:** 1 tablespoonful three times daily. **Sup:** Bottles of 1 pint.

—Continued on page 88a



STERISIL

## An aura of freshness

The itching and discharge of vaginitis can rob a woman of self-assurance and composure. To restore the feeling of personal cleanliness, Sterisil Vaginal Gel attacks the cause of vaginitis—be it moniliasis, trichomoniasis or *Hemophilus vaginalis*.\*

A new anti-infective compound with broad antibacterial, antifungal and antitrichomonal activity, Sterisil is effective against all three types of vaginitis.<sup>1-4</sup>

Sterisil, with unique affinity for tissue, clings to the site of application providing prolonged antiseptic action. In most cases, the gel need only be applied every other night.

\**H. vaginalis*, the pathogen now believed responsible for most cases of so-called "nonspecific" vaginitis.<sup>5</sup>

**Dosage:** One application every other night until a total of six has been reached. Treatment should be continued through one menstrual period. Severe cases may require treatment every night.

Available in 1½ oz. tubes with six disposable applicators and complete instructions.

**References:** 1. Wolff, J. R.: In press.  
2. Ray, J. L., and Maughan, G. M.: *West. J. Surg.* 64:581 (Nov.) 1956. 3. Feldman, R. L.: In press.  
4. Hofer, W. H. W., Bailey, F. A., and Farley, W. W.: *Antibiotic Med. & Clin. Therapy* 4:31 (Jan.) 1957.  
5. Gardner, H. L., and Dukes, C. D.: *J. Obst. & Gynec.* 69:962 (May) 1955.

# Sterisil®

**WARNER-CHILCOTT**

100 YEARS OF SERVICE TO THE MEDICAL PROFESSION

# NEW TOPICAL DIMENSIONS

in

Antiinflammatory  
Antipruritic  
Antiallergic  
Bactericidal  
Fungicidal  
Protozoacidal

action



pH 5.0

Creme

# COR-TAR-QUIN<sup>TM</sup>

ACID MANTLE® • hydrocortisone • stainless tar • diiodohydroxyquinoline

In subacute and chronic dermatoses, "especially where an inflammatory reaction was accompanied by increased scaling and lichenification with secondary infection such as is seen in seborrheic dermatitis, atopic dermatitis, contact dermatitis, and neurodermatitis."

—Rein, C. R., and Fleischmajer, R.: Personal Communication.



Sig: Apply b. i. d.  
½ oz., 1 oz., 2 oz., & 4 oz. tubes  
either 0.5% or 1.0% hydrocortisone



**DOME Chemicals Inc.**

109 WEST 64 ST., NEW YORK 23, N. Y.

In Canada: 2765 Bates Rd., Montreal, P. Q.

## JUST AS A REMINDER

*4 E.N.T. products to remember!*

**AURALGAN**

EAR DROPS

IN ACUTE OTITIS MEDIA  
SAFE AURALGESIC  
AND DECONGESTANT

**O-TOS-MO-SAN**

BACTERICIDAL - FUNGICIDAL

BROAD-SPECTRUM  
THERAPY WITHOUT  
ANTIBIOTICS

**RHINALGAN**

NASAL SPRAY

SAFE!  
"NOT JUST ANOTHER  
DECONGESTANT"

**LARYLGAN**

THROAT SPRAY - GARGLE - SWAB

FOR INFECTIOUS  
AND NON-INFECTIOUS  
THROAT INVOLVEMENTS

**DOHO**

CHEMICAL CORP., 100 VARICK ST., NEW YORK 13, N.Y.

**Matromycin Intravenous**, Pfizer Laboratories, division of Chas. Pfizer & Co., Inc., Brooklyn, New York. New form of oleandomycin phosphate. Indicated for treatment of severe resistant infections, especially those caused by resistant staphylococci and streptococci. **Dose:** As directed by physician. **Sup:** Sterile vials containing 500 mg. oleandomycin activity.

**Mysteclin V Pediatric Drops**, E. R. Squibb & Sons, Division of Olin Mathieson Chemical Corp., New York 22, New York. Each cc. contains 100 mgm. Sumycin and 100 MU Mycostatin. Indicated for pediatric use in treatment of the many common infections which are amenable to tetracycline therapy. **Dose:** As directed by physician. **Sup:** Dropper bottle of 10 cc.

**Neo-Hydeltrasol Ophthalmic**, Merck Sharp & Dohme, Division of Merck & Co., Inc., Philadelphia, Pennsylvania. Solution, each cc. of which contains 5 mg. prednisolone 21-phosphate and 5 mg. neomycin sulfate; or ointment, each Gm. of which contains 2.5 mg. and 5 mg. Indicated for various forms of conjunctivitis, iridocyclitis, keratitis, herpes zoster ophthalmicus, corneal ulcers and injuries and blepharitis, especially if the inflammatory conditions are complicated by infection. **Dose:** As directed by physician. **Sup:** Solution in 2.5 cc. and 5 cc. dropper bottles; ointment in tubes of 3.5 Gm.

**Neo-Hydeltrasol Topical**, Merck Sharp & Dohme, Division of Merck & Co., Inc., Philadelphia, Pennsylvania. Lotion, each cc. of which contains 5 mg. prednisolone 21-phosphate and 5 mg. neomycin sulfate. Indicated for treatment of various

dermatological diseases. **Dose:** 2 or 3 daily applications to the affected area. **Sup:** Plastic squeeze bottles of 1/2 fl. oz.

**Panmycin Phosphate 125 Mgm.**, The Upjohn Company, Kalamazoo, Michigan. Capsules, each containing tetracycline phosphate complex equivalent to 125 mg. tetracycline hydrochloride. Indicated for all infections caused by tetracycline-sensitive organisms. **Dose:** As directed by physician. **Sup:** Bottles of 25 and 100.

**Panogen Capsules**, Carroll Dunham Smith Pharmacal Co., New Brunswick, New Jersey. Combination of estrogens, hematinins and vitamins. Indicated to combat loss of vigor and excessive fatigue in patients over forty. **Dose:** 1 capsule daily or as otherwise prescribed. **Sup:** Bottles of 30 and 100.

**Parlite**, Lederle Laboratories Division, American Cyanamid Co., Pearl River, New York. Parenteral solution containing a balanced combination of six B complex vitamins and vitamin C. Indicated for prevention and treatment of the most frequently found deficiencies in the modern diet, and to provide the vitamins that help in hastening convalescence in prolonged infection and in shock resulting from severe trauma and burns. **Dose:** 5 cc. daily, or as indicated by physician. **Sup:** 5 cc. vials in packages of 5 and 25.

**Penite**, G. W. Carrick Co., Newark, New Jersey. Tablets, each containing 1/200 Gr. nitroglycerin, 10 mgm. pentaerythritol tetranitrate, and 0.07 mgm. reserpine. Indicated to give quick and certain action for the an-

—Continued on page 92a

A brighter outlook comes  
with a "sense of well-being"



Every woman who suffers in the menopause deserves "Premarin."

"Premarin" provides prompt relief from distressing symptoms and an added "sense of well-being."

"Premarin," available as tablets and liquid, presents the complete equine estrogen-complex. Has no odor, imparts no odor.

**"PREMARIN"®**

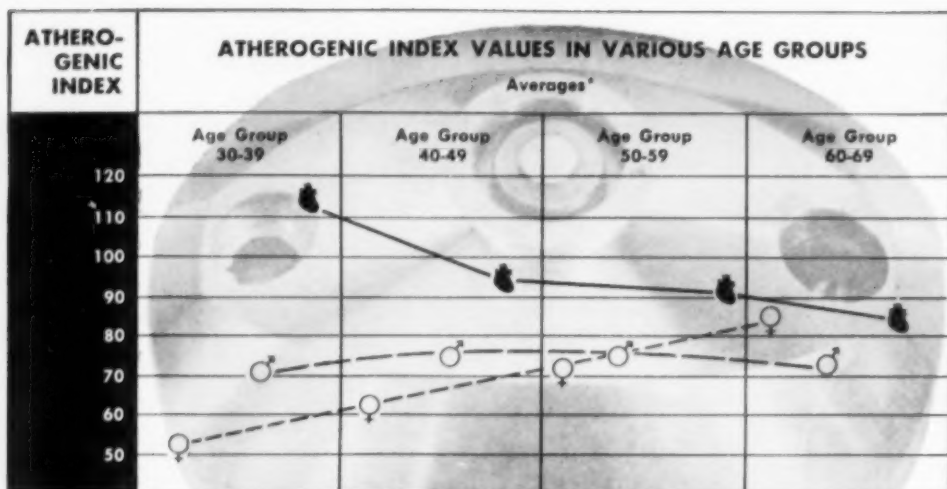
Conjugated estrogens (equine)

in the menopause and  
the pre-and postmenopausal syndrome



AYERST LABORATORIES • New York, N. Y. • Montreal, Canada





\*Averages derived from the following number of individuals in each group.

♀ Normal females:	188	140	80	9
♂ Normal males:	284	473	267	74
♂ Males with coronary heart disease:	9	91	148	61

Adapted from Gofman, J. W., and others; *Mod. Med.* 27:119 (June 15) 1953.



## HOW A DIZZY SPIN SPILLS THE FACTS about coronary disease and atherosclerosis

Here's research in grand style at the terrific speed of 60,000 RPM, with centrifugal fields reaching 300,000 *g*'s in the ultracentrifuge!

**The object:** identification and quantitation of the giant molecules among the complex lipoproteins of the blood.

**Significance:** elevation of certain blood lipids has been linked to the accelerated progression of coronary disease; disturbed lipid metabolism is suspected as a cause of atherosclerosis. Blood fractionation by ultracentrifuge has led to the development of atherogenic index values shown above: clinical atherogenic trends coincide with the atherogenic index obtained by this method.

**Application:** the ultracentrifuge is now being used to investigate the influence of dietary supplementation with "RG" Lecithin upon atherogenic index values in patients.

This is but one phase of the vast research on disease states which apparently are associated with lecithin insufficiencies. Lecithin, a constituent of all cells and organs, emulsifier, and lipid transport agent, is the focal point of attention.

**Glidden's "RG" Lecithin** is the only lecithin made specifically for medically indicated dietary purposes. It consists of 90% natural phosphatides in dry, free-flowing granules refined from soybeans.

"RG" Lecithin is well tolerated and readily utilized by the body. *There are no contraindications.* It is usually given in amounts of one teaspoonful t.i.d. (7.5 Gm.). (In current clinical research, amounts up to 60 Gm. daily are used.)

A preliminary report on **lecithin in health and disease** has been published and is available to physicians on request.



# RG® LECITHIN

A dietary phosphatide supplement.

The Glidden Company • Chemurgy Div., 1825 N. Laramie Ave., Chicago 39, Ill.



among nonhormonal antiarthritics...

unexcelled in  
therapeutic potency

## BUTAZOLIDIN®

(phenylbutazone GEIGY)

In the nonhormonal treatment of arthritis  
and allied disorders no agent surpasses  
BUTAZOLIDIN in potency of action.

Its well-established advantages  
include remarkably prompt action,  
broad scope of usefulness,  
and no tendency to development  
of drug tolerance. Being  
nonhormonal, BUTAZOLIDIN  
causes no upset of normal  
endocrine balance.

BUTAZOLIDIN relieves pain,  
improves function,  
resolves inflammation in:  
Gouty Arthritis  
Rheumatoid Arthritis  
Rheumatoid Spondylitis  
Painful Shoulder Syndrome

BUTAZOLIDIN being a potent therapeutic  
agent, physicians unfamiliar with its  
use are urged to read for detailed  
literature before instituting therapy.

BUTAZOLIDIN® (phenylbutazone  
GEIGY). Red coated tablets of 100 mg.

### GEIGY

Ardley, New York



gina patient, providing coronary vasodilator action with stress-relieving action. **Dose:** 1 tablet before each meal and 1 at bedtime, if necessary. **Sup:** Bottles of 100.

**Prednis,** Arlington-Funk Laboratories, Div. of U.S. Vitamin Corp., New York 17, New York. Tablets, each containing 5 mg. prednisolone. Indicated for treatment of rheumatoid arthritis, respiratory allergies, allergic dermatoses, etc. **Dose:** As directed by physician. **Sup:** Bottles of 100 and 1000.

**Rheostat,** Vanpelt & Brown, Inc., Richmond, Virginia. Liquid, each fluid ounce of which contains 16.2 mg. phenobarbital, plus a combination of hyoscyamine sulfate, atropine sulfate, hyoscyne hydrobromide, kaolin, pectin, sodium and potassium. Indicated for control of diarrhea and relief of inflammations and acute upsets of the gastrointestinal tract. **Dose:** As directed by physician. **Sup:** Bottles of 1 pint.

**Senokot with Psyllium,** Purdue-Frederick Company, New York, New York. Granules, each teaspoonful of which contains 450 mgm. cassia acutifolia pods and 1.0 Gram psyllium husks. Indicated for treatment of constipation. **Dose:** 1 level teaspoonful in full glass of water or milk once daily; chronic constipation, 1½ teaspoonfuls daily. **Sup:** Containers of 5½ oz.

**Sigmol Enema,** Pharmaseal Laboratories, Glendale, California. Sodium-free, non-irritating enema, each 120 cc. of which contains 43 Gm. sorbitol solution NF and 0.12 Gm. potassium dioctyl sulfosuccinate. Pre-packaged, ready to use, in flexible disposable container.

**Sintrom,** Geigy Pharmaceuticals, Ardsley, New York. Tablets, each containing 4 mg. acenocoumarin Geigy. Indicated for oral anticoagulant therapy in thromboembolic disorders including coronary thrombosis, thrombophlebitis, arterial thrombotic occlusion, pulmonary embolism, selected cases of congestive heart failure and cardiovascular surgery. **Dose:** As directed by physician. **Sup:** Bottles of 50.

**Sumycin Pediatric Drops,** E. R. Squibb & Sons, Division of Olin Mathieson Chemical Corp., New York 22, New York. Each cc. contains 100 mgm. tetracycline phosphate complex. Indicated for various types of infections amenable to tetracycline therapy. **Dose:** As directed by physician. **Sup:** Bottles of 10 cc.

**Sumycin Suspension,** E. R. Squibb & Sons, Division of Olin Mathieson Chemical Corp., New York 22, New York. Each teaspoonful contains 125 mgm. tetracycline phosphate complex. Indicated for common infections of the intestinal and gastrointestinal tract. **Dose:** 1 teaspoonful three or four times daily. **Sup:** Bottles of 60 cc.

**Tetragon V Syrup,** Pfizer Laboratories, Division of Chas. Pfizer & Co., Inc., Brooklyn, New York. Orange flavored, homogenized suspension of tetracycline buffered with phosphate, each teaspoonful of which contains 125 mg. tetracycline. Indicated for treatment of the wide range of diseases for which tetracycline is indicated. **Dose:** As directed by physician. **Sup:** Bottles of 2 oz. and 1 pint.

**Tetrex Pediatric Drops,** Bristol Laboratories, Inc., New York, New York. Each cc. contains the equivalent of

—Concluded on page 94a

a **New**  
unique product for  
**Nausea and Vomiting**  
of **Pregnancy**  
motion sickness  
inner ear disturbance

# Bucladin

pleasant-tasting Softab\* form  
melts quickly in the mouth  
no water needed.

attacks basic causes centrally  
and peripherally.  
contains both antiemetic  
and antispasmodic.  
well tolerated • long acting.  
lower in cost.



**Each Softab Contains:**

Doxylamine Hydrochloride .. 50 mg.  
Vitamin B<sub>6</sub> ..... 10 mg.  
Pyridostigmine (Hyoscine) .. 0.2 mg.  
Meprobamate ..... 0.05 mg.  
Meprobamate ..... 0.05 mg.

*Write for samples and literature*

**Stuart**

THE STUART COMPANY, PASADENA, CALIFORNIA

\*TRADEMARK  
PATENT PENDING



100 mg. tetracycline HCl. Indicated in many infections due to tetracycline-sensitive organs. **Dose:** 100 mgm. (from calibrated dropper) in milk or juice. **Sup:** Dropper bottles of 10 cc.

**Tron-Oto**, Abbott Laboratories, North Chicago, Illinois. Solution in ear drop form containing Tronothane (Pramoxine, Abbott), Erythrocin and polymyxin B. Indicated for symptomatic treatment of simple earache, also to treat fungus infections of the ear, eczema, and inflammation of the external ear. **Dose:** 3 or 4 drops applied into the external ear three or four times daily. **Sup:** Dropper bottles of 5 cc.

**Whet Tablets**, Lloyd Bros., Inc., Cincinnati, Ohio. Each tablet contains 300 mgm. monosodium glutamate

and 30 mgm. nicotinamide. Indicated as an appetite activator for use in underweight, undernourished individuals. **Dose:** 1 tablet twice daily for children and 2 tablets twice daily for adults. **Sup:** Bottles of 60.

**Zamine**, Marion Laboratories, Inc., Kansas City, Missouri. Capsules, each containing 10 mg. or 15 mg. d-amphetamine sulfate. Indicated for treatment of obesity. **Dose:** 1 capsule on arising. **Sup:** Bottles of 30 and 500.

**Zamitol**, Marion Laboratories, Inc., Kansas City, Missouri. Capsules, each containing 10 mg. d-amphetamine sulfate and 1 grn. amobarbital acid, or 15 mg. and 1½ grn. Indicated for treatment of obesity. **Dose:** 1 capsule on arising. **Sup:** Bottles of 30 and 500.

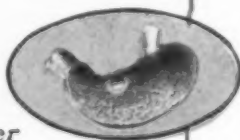
#### SATISFACTORY REDUCTION OF GASTRIC SECRETION.

Each patient has wide physiological and emotional tolerances to anticholinergics. Malcotran's wide dosage latitude facilitates regulation of your patient's dosage *according to his need, not his tolerance.*

Malcotran assures prompt arrest of gastro-intestinal motility — and reduction of gastric secretion.

## MALCOTRAN®

for peptic ulcer



PM-73

MALTBIE LABORATORIES DIVISION • WALLACE & TIERNAN INC.

to quiet  
the cough  
and calm  
the patient . . .

Your modern cough prescription

*Expectorant action*

*Antihistaminic action*

*Sedative action*

*Topical anesthetic action*



# PHENERGAN<sup>®</sup>

## EXPECTORANT

Promethazine Expectorant  
With Codeine

Plain (without Codeine)



Philadelphia, Pa.

# New!

# Theradan

TRADEMARK

## with Sarthionate

T M

*Clears up the severest dandruff with just 3 applications*



### RELIEF LASTS FOR MONTHS

Twenty months of clinical investigation on dandruff demonstrate *complete clearing of scaling in all cases*, usually with just three applications of easy-to-use THERADAN. Dandruff cases resistant to resorcin, sulfur and selenium preparations clear promptly and safely with new THERADAN.

*Relief of scaling is long-lasting—scalp stays clear for 1 to 4 months.*

### HOW THERADAN ACTS

THERADAN is a therapeutic formula not a shampoo or tonic. THERADAN contains Sarthionate, our trademark for a distinctive new combination of a special form of sulfur and a wetting agent.

This unique solution not only clears loose dandruff, but also removes dead tissue by penetrating the outermost layers of the scalp. In mild or moderate cases of seborrhea, THERADAN is left on the scalp for ½ to 1 hour before shampooing. In severe cases, THERADAN is left on up to eight hours or over night.

## Theradan

active ingredients

#### Sarthionate

bis-lauryltrimethylammonium polythionate (by weight) . . . 3.6%  
 tetradecylamine o-lauryl carboxine . . . (by weight) . . . 0.5%  
 ethyl alcohol . . . (by volume) . . . 66.85%

For more information about the clinical background of THERADAN, write to Medical Director, Dept. M-97



Bristol-Myers Co. • 19 W. 50 St. • New York 20, N. Y.



in stress situations

effectively  
supplements  
ataractic  
therapy

The modern tempo of life, as reflected in the stressful activities of the responsible executive, often induces physical and emotional debilitation. To meet increased metabolic needs caused by stress, **STRESSCAPS** promptly replenishes vitamins in an authoritatively recognized formulation.

*Each Capsule Contains:*

Thiamine Mononitrate (B<sub>1</sub>) 10 mg.  
Riboflavin (B<sub>2</sub>) 10 mg.  
Niacinamide 100 mg.  
Ascorbic Acid (C) 300 mg.

Pyridoxine HCl (B<sub>6</sub>) 2 mg.  
Vitamin B<sub>12</sub> 4 mcgm.  
Folic Acid 1.5 mg.  
Calcium Pantothenate 20 mg.  
Vitamin K (Menadione) 2 mg.

*Average Dose: 1-2 capsules daily.*



**STRESSCAPS** \*

Stress Formula Vitamins **Lederle**

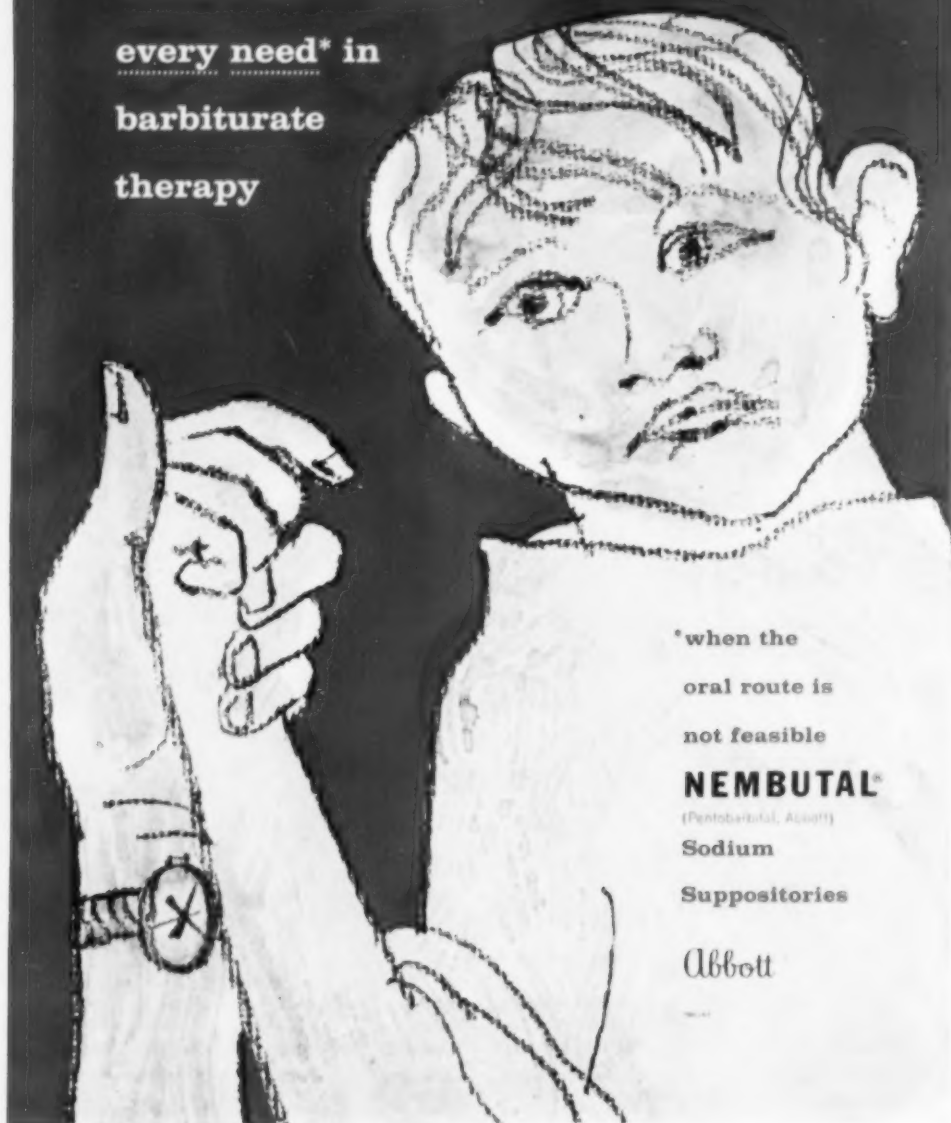


LEDERLE LABORATORIES DIVISION, AMERICAN CYANAMID COMPANY, PEARL RIVER, NEW YORK

\*Reg. U.S. Pat. Off.



There is a form  
of short-acting  
**NEMBUTAL** to serve  
every need\* in  
barbiturate  
therapy



\*when the  
oral route is  
not feasible

**NEMBUTAL®**

(Pentobarbital, Abbott)

Sodium

Suppositories

Abbott



---

# Medical Services: Today and Tomorrow

DAVID B. ALLMAN, M.D.  
President  
American Medical Association  
Atlantic City, New Jersey

The face of America is ever-changing, never at rest. No matter where we look—people, places, products, services—the evidences of change are immediate to the eye.

Among the *people* there are more older folks, more infants, more school children, more workmen.

In thousands of *places* across our land changes are so drastic as to make one wonder how man can possibly effect such alterations in so short a time.

In the *products* we buy change is the annual, seasonal, or daily byword, for

products that don't change seldom reach their sales potential.

Even *services*, including the professional variety, are different from those of a year or less ago.

In art and music, in recreation, in transportation—yes, in everything we know, the emphasis is on the new and different.

The changes have ranged from minor to revolutionary variations, but I hasten to add that all have not been for the better. There have been unwise changes, and we can be sure there will be more.



Dr. Allman has been a prominent figure in the activities of the A.M.A. for a long time. He has served many times as chairman of the local committee on arrangements for the annual convention. He was elected a member of the Association's Board of Trustees in 1951, and was appointed chairman of the Committee on Legislation in 1952. He has testified many times, before congressional committees, against bills relating to socialized medicine. A glance through his testimony uncovers key phrases such as, "The medical profession in this country, united and strong, repeats the words of Emerson's 'American Scholar': 'We will walk on our own feet; we will work with our own hands; we will speak our own minds.'"

Even now we live with certain changes which we are not sure will prove beneficial or progressive.

Nevertheless, wherever Americans have made changes they have tried to improve upon the old. In all things Americans strive for perfection, even though we may never quite obtain it. But we go ahead always seeking at least to approach the goal of perfection.

As a result of this endless effort Americans now enjoy more of the best products and services than any other people in the world.

High on the list of these best items is medical care . . . unequalled or unapproached anywhere in the world. This top ranking has been reached because of changes—small and large ones, gradual processes and speedy alterations, broad reforms and less sweeping changes.

No. medical men do not claim the whole credit for the fabulous advancement of medicine since the turn of the century. We share the credit with our great hospitals, our incomparable pharmaceutical industry, our excellent nurses, chemists, physiotherapists and innumerable other ancillary, healing arts specialists.

Today American medicine holds the torch of world medical leadership. We are expected to be the leaders, not the followers, in medical education, postgraduate training, research, rehabilitation, preventive medicine, voluntary prepayment plans and scores of other medical matters. The task of leadership is gigantic, but medicine will not shrink from its duty.

The medical profession zealously searches for improvement in medical care and practice. It welcomes suggestions for change, reform and improve-

ment; it promises full study of new ideas, and it assures adoption of those which will give better medical care to patients.

**Generalist and Specialist** Progress in medical knowledge has been so rapid that no physician possibly can be possessed of the knowledge or techniques needed to be effective in all branches of medicine. The result has been an enormous growth in the specialties.

Today there are 19 recognized specialties, five sub-specialties and 27 special divisions of specialties. In the future the number of specialties is not likely to increase greatly. However, as the population of older people grows we are certain to have the pediatrician's counterpart—the geriatrist.

We also will see further breakdown within the specialties. For example, in metropolitan areas we probably will find surgeons who will limit themselves to vascular or cardiac surgery.

Does this mean the general practitioner is on the way out? Definitely not. In fact, a further breakdown of the specialties should help to increase the number of GPs.

Already there is an increasing public demand for more personal physicians, for doctors who deal with human beings as a whole instead of with parts of individuals.

More patients today want a physician to whom they can turn for counsel and advice, and for medical direction and health coordination of their family's medical care.

So the generalist is enjoying more prestige than he has had for many years. He will gain more, too, because of the higher standards and longer training being set for GPs. Already

medical schools are placing new emphasis on generalist training and GP postgraduate study. While there still are a large number of medical graduates going into the specialties, the proportion of men entering general practice is growing. Within 10 years I see medical schools graduating many more GPs than any other specialty.

We won't go back to the era of the old general practitioner who did everything, but we are going into an era of more personalized medicine. The family doctor still will treat up to 85 per cent of the illnesses coming to him, but in the special things in which his training and experience is limited, he will call in his colleagues—the specialists. With their help the family physician or health coordinator will plan the comprehensive care of the patient.

For the public and the profession GP directorship of family medical affairs is a welcome trend.

**Group or Solo Practice** Some medical prognosticators recently have forecast the end of solo practice in favor of group practice. I do not believe that solo practice will ever die out, or that the solo physician will even become a rarity. There has been, since World War II, a widespread interest in group practice, but the problems involved in creating and operating groups still keep their actual growth at a minimum.

Groups with their advantages of easily available consultation, opportunity for postgraduate work, reduced overhead, sick pay, vacation pay and shorter hours will continue to lure new graduates. But there are problems in groups, too. Many doctors enter a group for experience, and have no intention of becoming a permanent member. There

are problems of personality differences, partnerships, and the attraction of being "on one's own" in solo practice.

The movement toward group practice has been based on the sincere belief that several physicians can provide better medical service to their patients in their particular areas. I believe this will continue to be the prime factor in determining whether physicians choose groups or free-lance practice.

My personal belief is that in the foreseeable future the majority of the practitioners will continue to prefer solo practice, and will compete with their colleagues in groups on the basis of their own knowledge, skill and personality. Consequently, both of these forms of practice will give the American people excellent medical service in the future.

**Third-Party Sponsors** The three largest, third-party sponsors of medical services are unions and management, government and hospitals.

Developments in industrial medicine and union health and welfare plans are important trends in medical service. Both are departures from private practice.

In most industrial health plans medical service is restricted to the medical and health problems on the job. Inplant medical care usually includes preplacement examinations, diagnostic examinations, counselling regarding illness that causes absence from work, periodic examinations where workers are exposed to occupational hazards, rehabilitation of the injured and other aspects of a preventive health nature.

However, in some instances inplant medical care has expanded to include certain phases of outplant care. Although there is no clear trend to this

type of care, many industries certainly are talking about such possibilities. In fact, some believe medical care also should be provided for the worker's family.

Already there are 25,000 physicians who have some official medical tie-in with industry—full-time, part-time or on call. We can expect increasing demands for physicians interested in industrial medicine—its reparative, preventive and constructive phases. It is almost certain that thousands of physicians will become salaried men for industry or will assume some tie-in on a part-time basis.

Union health and welfare plans have taken two forms: (1) Insurance programs ranging from limited coverage to a comprehensive package, and (2) arrangements for the provision of medical care, generally in union health centers, with the programs ranging from referral or diagnostic service to comprehensive family medical care. However, it would seem that the great majority of union members still will continue to be covered under insurance programs.

In seeking medical services the unions have gone in several directions. The union health center is sponsored by a single union or by several unions, and may be limited to ambulatory patients or it may include comprehensive medical care. In 1945 there were only three such centers. Today there are about 40. Seven centers were opened in the last two years.

Some unions also have become parts of larger third-party sponsored medical care plans, and in several states a large union is using mobile centers to supply diagnostic service. Another large union is seeking (1) to create group

practice units in hospitals with the physicians on salaries, and (2) to sell the physicians' services on a prepaid basis.

Other unions are studying various ways and means to best spend the money coming into their health and welfare funds.

How far unions and management will move into the comprehensive medical care field is a matter of pure speculation, but we do know that unions and their members want comprehensive family medical care on a prepaid basis, if possible.

These new demands by groups of medical care consumers cannot be ignored, and the best possible solutions will be attained by conference-table discussions, at the local level, by those providing the service.

#### **Government in Medical Service**

Government intrusion into medical services seems to be unrestrained at the moment. While federal medical care arrangements are not new, they have increased considerably in recent years.

For example, this year a large number of private practitioners, for the first time, are confronting many thousands of men and women in a doctor-patient relationship arranged by Uncle Sam via the Medicare plan. This new federal program will cover the bulk of medical-surgical, and hospital needs for some two million dependents of U.S. uniformed forces. Benefiting under the 65-million-dollar-a-year project are the wives and children of Army, Navy, Air Force, Coast Guard, commissioned U.S. Public Health Service, and commissioned Coast and Geodetic Survey personnel.

Under the Veterans Administration program millions of veterans are potentially eligible for federal medical ser-

vices in V.A. hospitals, and thousands annually receive hospital and medical care, either for service-connected disabilities or for non-service-connected ailments. Not only is the program costing the taxpayer millions of dollars each year (the current V.A. budget is \$25 million), but also it is siphoning off personnel and facilities needed to develop adequate health facilities for all the American people, including the veterans and their families in their home communities.

The U.S. obligation to its disabled veterans should be met, of course, but the question constantly arises: Is it fair for millions of veterans who have suffered no disabilities as a result of their military service to receive free medical care and hospitalization at the expense of the rest of the population?

Just last year the Social Security Act also was amended to provide benefits to those 50 years of age and older who are covered by Social Security and who are totally and permanently disabled.

In general, I believe government should develop programs in the field of health which cannot be carried out by private resources. Government must assume a major responsibility for the indigent and the mentally ill. Even here, I believe it should be financed as locally as possible with the federal government participating only when absolutely necessary.

To me the basic role of wise government should be to stimulate the development of private resources and promote a climate in which private effort and ingenuity can exert their full effect.

**Hospital Medical Services** Another third-party group that has gone into the field of medical service has been the hospitals. For years in some hos-

pitals the services of medical specialists like pathologists, radiologists, and anesthesiologists have been considered as hospital services, not medical services. This idea is in complete contradiction to the beliefs of the medical profession.

Any trend toward the furnishing of medical services by hospitals may have been forestalled by the recent ruling in Iowa that has declared the services of pathologists, radiologists, and anesthesiologists to be medical.

However, it is unlikely that this Iowa court decision will stop corporate practice of medicine dead in its tracks.

Some hospital administrators hold to the idea that the health center of the community should be the hospital, and, as such, it should be permitted to employ physicians to provide all services pertaining to the physical well-being of all persons in its vicinity or territory.

Following this philosophy, many new hospitals are erecting private-practice wings for their staffs. And there are some predictions that hospital staffs will be composed entirely of salaried physicians.

On the other side of the coin is the idea that the hospital should not be the center of medical practice, that the important aspect is the care of ambulant patients, and that hospitalization is something incidental to this care.

Basic differences in views by hospitals and physicians, I believe, will hold down any widespread development in the provision of medical services by hospitals.

### **Medical Compartmentation**

While the type of medical service may change for more people in the future, the compartmentation of medical care will be similar to that of today—preventive, diagnostic, therapeutic and re-

habilitative—with a greater emphasis on prevention and rehabilitation.

Methods of diagnosis will expand and current methods will be highly refined to produce even better diagnosis. While modern treatments are truly amazing, we undoubtedly "haven't seen anything yet."

Already the public is hearing more and more about the prevention of illness and poor health. As the educational program for preventive medicine rolls along, a larger percentage of the public is certain to heed the call for periodic physical examinations and the general maintenance of good health. New preventive measures will be offered and medicine will push its work on disease in relation to modern-day stress.

Perhaps the most important field of medical service in the future will be among the older people.

Indeed, the geriatrist soon may become America's No. 1 specialist. The evidence to support this prediction is the simple fact that age brings complications and all manner of difficulties and that America's older population is increasing rapidly. Today  $8\frac{1}{2}$  per cent of the American population is over the age of 65, or a total of approximately 14 to 15 million persons. Within two decades the percentage will jump 10 to

15 per cent over 65, or  $22\frac{1}{2}$  to 33 million persons.

Medicine is cognizant of its duty and role in providing the essential medical services for these persons, and it will make every effort to see that the aged live gracefully and happy in their later years.

Longer life and the elimination of other causes of death will mean new medical emphasis on certain diseases in the future. Among these diseases are vascular deterioration, cancer, arthritis, rheumatism, and mental and emotional disorders. The rapidity and complexity of transportation continues to augment the accidental disabilities and death, and necessitates preventive study of broad social and medical implications. These, then, are some of the scientific areas in which many more doctors will be concentrating in the future.

I also believe physicians will put more emphasis on the team approach, and individually on the art of medicine. The return to compassionate interest and understanding of the patient will come because of the desire of the physician to have the complete confidence of his patient in every medical situation.

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# Infants Born of Diabetic and Prediabetic Mothers

This summarization attempts to cover the essential information on the subject, and is designed as a time-saving refresher for the busy practitioner.

The pathologic physiology of these infants born of diabetic and prediabetic mothers has not been established and, therefore, a scientific approach to medical care of these infants is not known. However, a review of some of the facts and theories may aid in establishing a consistent method of evaluating the problem.

It has been estimated that approximately one out of every 500 births is associated with maternal diabetes. With terms as "abortion" and "viable pregnancy" not defined by the various authors the exact mortality is unknown. In general the perinatal mortality ranges from 10% to 50%. Miller,<sup>1</sup> states that most probably it is in the range of 13% to 27%. At any rate the mortality is at least five times higher than the usual mortality for live births over 1000 grams. This same mortality has also been found in infants of the prediabetic, that is, the mother has no chemical or clinical evidence of diabetes at the time of her pregnancy but who goes on to develop diabetes.

A list of some of the possible etiologies of perinatal death include:<sup>1,2,3,4</sup>

## Maternal Factors

- Maternal diabetes
- Toxemia
- Premature labor
- Hormonal imbalance of the mother
- Vascular disease of the mother
- Placental abnormalities
- Dystocia due to irritability of the uterus and large fetal size
- Hydramnios
- Intrauterine hypoxia

## Fetal and Newborn Factors

- Macrosomia
- Visceromegaly
- Extramedullary hemopoiesis
- Endocrine gland abnormalities
- Kidney immaturity
- Congenital defects
- Atelectasis and hyaline membrane
- Prematurity

The cause of death of the newborn appears to be more easily understood than that of the fetus. It is well known that the peak of intrauterine death occurs during the last part of the third



trimester but the cause is not determined. Although there is much discussion in the medical literature regarding the etiology of the signs and symptoms characteristic of the course of the live born infants of diabetic mothers, most workers are in agreement with regard to the clinical findings. These infants are larger by weight and other measurements, they appear mature and even past mature despite early delivery, and there is a generalized edema which is non-pitting and best demonstrated by marked weight loss during the first 24 to 48 hours of life.

Of the live born, Gellis,<sup>3</sup> divides them into two groups: those who do not develop any unusual manifestations and those who exhibit respiratory distress. Of that minority which develop respiratory signs and symptoms the following pattern is observed. The newborn either immediately or within a few hours shows an increasing respiratory rate, retractions, inconstant respiratory rates, and a constant complaining cry. Cyanosis may or may not be present. Such symptoms gradually improve over the next 48 to 96 hours or these infants develop greater distress and die. It would seem then, that one of the causes of death in these infants is related to or manifested by the respiratory system. Gellis feels that there is a similarity between these infants and those with the cesarean section syndrome, both being due to hyaline membrane.<sup>5</sup> He has shown that there is increased amniotic fluid in the stomach of infants born of cesarean section and believes that regurgitation and aspiration of this fluid may be the cause of hyaline membrane. Prematurity of these infants adds to the risk of hyaline membrane formation.

The severity and duration of mater-

nal diabetes, along with the complications of hydramnios, ketosis, and vascular degeneration are listed as possible etiologies of fetal and newborn deaths, these are not easy to evaluate. One author states that the fetal mortality has remained persistently high in spite of the use of insulin, in fact, in the pre-insulin era it was 41% (undoubtedly a very small series) and it has not changed since.<sup>6</sup> Ketosis is known to carry a high mortality. Of the others, there seems to be a relation between advanced degenerative changes and prenatal death. The juvenile diabetic with vascular changes is particularly prone to toxemia and high fetal mortality. But, even without these complications there is still a significant number of intra-uterine deaths attributed only to the maternal diabetes. The use of hormonal therapy during pregnancy is still controversial, most authors seeming to feel it does little good.<sup>1,6,15</sup> The rationale of using hormones became apparent in 1935 when Smith and Smith found a hormonal imbalance in toxemia of pregnancy. Priscilla White<sup>1,7</sup> following this lead, has indicated there is an imbalance of sex steroids during pregnancy as shown by an abnormal rise in chorionic gonadotrophin and a low value of urinary estrogens and pregnanediol (the urinary excretion product of progesterone). She feels that stilbesterol improves the utilization of chorionic gonadotrophin, thereby increasing the activity of syncytium. This, in turn, improves placental estrogen and progesterone which improves uterine vascularity. In her experience hormones have reduced the incidence of spontaneous abortions, premature labor, toxemia and hydramnios.

The large infant, per se, has been



incriminated in several ways for contributing to the mortality. Gigantism occurs in 40% to 70% of the diabetic and prediabetic pregnancies. The cause of this macrosomia and the effect it has on delivery have been mentioned as the etiology of perinatal death. The size of the infants has been attributed to hyperglycemia but this is probably not significant since prediabetics frequently have large infants long before there is chemical or clinical evidence of disease. That the macrosomia may be due to maternal anterior pituitary growth hormone has been pointed out by Barnes<sup>6</sup> and later, in an excellent monograph, Gauchat<sup>8</sup> indicates that the newborn infant of a diabetic or prediabetic mother has developed in an environment characterized by excessive stimulation of both the anterior pituitary and the adrenocortical hormones, secondary to hormonal alterations of the mother. The excessive growth hormone causing the increased skeletal growth and muscle mass, visceromegaly, and hypertrophy of the pancreatic islets. Excessive adrenocorticotrophic hormone causes the increase of body fat, hirsutism, sodium retention edema, excessive erythropoiesis, and a relative potassium deficiency. These infants resemble the acromegalic and the patient with Cushing's Syndrome.

Following birth Gauchat believes there is a period of adrenocortical insufficiency due to withdrawal of maternal ACTH. Potassium deficiency he believes may be responsible for the changes of cardiac and skeletal function with congestive failure, weakness, and tremors. Lowery reminds us that he has not found an electrolyte pattern consistent with Gauchat's formulation.

Cardiomegaly, hyperplasia of the

islets of Langerhans and adrenal glands as well as abnormalities of other endocrine glands have been described by various authors as contributing factors for death.<sup>1,2,4,9</sup> The cause for the cardiomegaly has not been established. It must be remembered that chest x-rays of the newborn are a notoriously inaccurate way of determining heart size and cardiomegaly is absent in many of these infants who die. Congestive heart failure is often mentioned in connection with the cardiomegaly, however, there is little to support this, particularly with a lack of enlarging liver, venous distention, and pitting edema.<sup>5</sup> The hypertrophy of the heart is due in part to increased glycogen storage. Hyperplasia of the islets is found in erythroblastosis fetalis as well as in these infants of the diabetic. McKay et al believes that the eosinophilic infiltration of the interstitial tissue of the pancreas seems to be pathognomic for these infants. The islets show an increase of beta cells. Depending on the author and his experience<sup>3</sup> the adrenals and pituitary are either deemed normal or abnormal. Lowery implies that they are normal. Cardell<sup>10</sup> mentions that immature glomeruli are found supporting the contention that despite the large size many of these infants are premature. The placenta shows no abnormalities. Extramedullary erythropoiesis is found frequently particularly in the liver and spleen.

Intrauterine anoxia has been mentioned by Anderson as a factor in perinatal death. He found that a large number of erythroblasts were found in children who died immediately after birth of asphyxial symptoms that might have been a consequence of intrauterine hypoxia. A large number of nucleated red blood cells are found in children of

diabetics, erythroblastosis, and in the post maturity syndrome. Perhaps these same placental changes occurring in the postmature begin earlier in the diabetic. Berglund and Zetterstrom<sup>11</sup> have found decreased oxygen saturation in the cord blood of these infants, further substantiating the role of hypoxia.

Congenital abnormalities occur six times as frequently in the infant of the diabetic but they are responsible for death in only a small per cent of cases.<sup>2</sup>

Neonatal hypoglycemia has been shown to occur in normal newborn. The infant of the diabetic has a high blood sugar at birth which drops precipitously to somewhat lower levels than the normal but, generally, hypoglycemia plays no role in the syndrome of these infants.<sup>1, 2, 3, 12</sup> The administration of two grams of glucose failed to make any appreciable difference on the blood sugar levels. Gellis mentioned that in three cases only was glucose necessary and this was because the mother had received insulin prior to delivery. There was complete uniformity amongst the authors on this point that low blood sugar levels do not play an important etiological role in this syndrome.

Lowery found that there were several differences between the infants of diabetic mothers and normal newborns as far as the blood electrolyte pattern was concerned; these are: a lowered blood pH with a high partial pressure of  $\text{CO}_2$ . He found a direct correlation between the severity of the acidosis and clinical signs of edema, cyanosis, dyspnea, lethargy, poor sucking, and crying. The acidemia he thought was not due to acid metabolites because the bicarbonate ion was not markedly reduced and organic and inorganic acid radicals were essentially normal. The acidemia and

high partial pressure of  $\text{CO}_2$  may then represent respiratory acidosis due to pulmonary edema, atelectasis, or hyaline membrane formation. Cerebral edema must also be considered as a factor in suppressing respiration. Lowery also found a wide range of other electrolytes which indicated that these infants have difficulty in establishing homeostasis. He found no evidence of a D O C A like effect due to over activity of the adrenocortices, there was no increase in fixed base. The findings of acidemia would seem to correlate well with clinical and pathologic findings.

The management of the newborn begins with the prenatal care. Most authors are in complete agreement that a team composed of an internist, obstetrician, and pediatrician is essential. Rigid control of the diabetic status is mandatory. The use of sex hormones during pregnancy has not been established but many feel they are not indicated. The time of delivery has not been definitely established. Many authors feel that elective cesarean during the 35th to 36th week offers the best chances of survival by eliminating the chance of intra-uterine death.<sup>1, 3, 4, 15</sup> Palmer states that x-ray appearance of the femoral epiphysis, during the 36th week is extremely helpful in determining the correct time for cesarean section. Other authors deplore elective cesarean section because of the added dangers of prematurity and increased risk of hyaline membrane.<sup>16</sup> Maternal insulin should be withheld on day of delivery or full glucose coverage given if it is used. The infant should be delivered as rapidly as possible after minimal anesthetic or analgesia. Gellis states that the infant should be held up side down by the ankles until after the stomach has been carefully, deliberately,

and thoroughly suctioned. Then O<sub>2</sub> should be administered and the patient stimulated to a full cry. Oxygen, high humidity postural drainage, and suction p.r.n. are ordered. Most authors prefer them to be handled during their hospital stay in a premature unit. Antibiotics are used if respiratory distress develops. Feedings should be delayed particularly in the presence of edema and respiratory distress. There is no set pattern for handling the infant who is in acidosis. Serial EKG's for potassium deficiency, electrolytes, pH, and total eosinophile count may aid management during the first eight hours

of life. Once feedings are begun a routine formula is used; diabetic women seldom lactate.

White<sup>16</sup> has followed 204 infants of diabetic parents with the following result:

- 19 had two diabetic parents. 62% had clinical or chemical evidence of diabetes under the age of 20, while 36% had clinical evidence of disease.

- 100 infants had diabetic mothers. 23% had chemical and 9% clinical evidence of diabetes under the age of 20.

- 85 infants had diabetic fathers. 21% had chemical and 9% clinical evidence of disease under the age of 20.

### Summary

In summary then, the infant of the diabetic and prediabetic presents a clinical picture which may be due to hormonal imbalance. The distress and death of the neonate may be due to electrolyte im-

balance secondary to this same hormonal imbalance, anoxia, or pulmonary pathology. The prognosis for these infants is generally good, however, a good percentage develop juvenile diabetes.

### Bibliography

1. Miller, Herbert C.: Offspring of Diabetic and Prediabetic Mothers. *Advances of Pediatrics*, Vol. III.
2. Lowery, et al.: Homeostasis in Infants of Diabetic Mothers. *Ped.* 13:527, 1954.
3. Gellis, Sidney, O.: The Care of the Newborn Infant of the Diabetic Mother, in: *Proceedings of the Special Committee on Infant Mortality of the Medical Society of the County of New York*, 1950-51.
4. Bachman and Block: Diabetes Mellitus and Pregnancy. *American Journal of the Medical Science*, 223:681, 1952.
5. Gellis and Winter: Pulmonary Hyaline Membranes in Infants of Diabetic Mothers. *American Journal Diseases of Children* 87:702, 1954.
6. Berns and Morgan: Pregnancy Complicated by Diabetes Mellitus. *British Med. J.*, Vol. 1:51, 1949.
7. White, P.: Use of Female Hormones in Pregnant Diabetic Patients. *Am. J. Obs. and Gyn.* 1956.
8. Gauchat, Robert D.: Problems posed by the Newborn Infant of a Diabetic Mother. *J. Iowa Med. Soc.* 43:416, 1953.
9. Miller, H. C.: The Effect of Diabetic and Prediabetic Pregnancies on the Fetus and Newborn Infants. *Ped.* 29:455, 1946.
10. Cardell, Infants of Diabetic Mothers. *The Journal of Obs. and Gyn. of the British Empire*, 60:834.
11. Berglund and Zetterstrom: Infants of Diabetic Mothers. *ACTA Paediatric*, 43:368, 1954.
12. Komrower: Blood Sugar Levels on Babies Born of Diabetic Mothers. *Arch. Dis. Children*, 29:28, 1954.
13. Medical Research Council: The Use of Hormones in the Management of Pregnancy of Diabetics. *Lancet* 269:833.
14. Newcomb: The Newborn of Diabetic Mothers. *Am. J. Obs.* 71:74, 1956.
15. Pedrovitz: The Pregnant Diabetic Patient. *Am. J. Obs.* 69:395.
16. Panel Discussion: Diabetes in Pregnancy. *Diabetes*, 3:456, 1954.

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# Clinical Value of Bone Marrow Examination

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Though bone marrow examination is relatively simple and the interpretation of its results by no means always difficult, it is surprising how seldom the internist uses it himself, preferring to leave it to the specialized hematologist. Anyone with experience, however, will attest that bone marrow examination is not only the most important diagnostic test in many hematologic disorders but also a very valuable additional source of information in many diseases which are at first sight not primarily hematological. It is a procedure which should be employed frequently and should be done early in the evaluation of the patient's condition.

**Technique of Aspiration** Needle bone marrow aspiration is accomplished quite simply. The site usually chosen is the sternum near the insertion of the third costal cartilages. Other bones which are often preferred are the anterior spine of the ilium and the spine of a lumbar vertebra. The needle must be sharp, it should have a well-fitting trocar and it should be long enough to be manipulated with comfort. Many pre-

fer it to be equipped with some form of screwed-on guard a certain distance from the point to prevent too deep a penetration into the bone but others feel that this form of protection is not necessary once the manipulation of the needle has been mastered.

After local anesthesia, the needle is inserted into the marrow cavity with a rotatory motion. No pain is felt by the patient until the syringe is applied and marrow removed; at this moment he as often as not feels a sharp momentary stab which is never severe. The patient may be told that any visit to the dentist is much worse and the operator should remember that simple venepuncture can be ten times more difficult.

Marrow should be aspirated with a 20cc. syringe since this exerts adequate suction but only the minutest amount of marrow should be removed so that there is a minimum of dilution with peripheral blood. The specimen, which should be much less than 0.25cc is immediately expelled into a watch glass or well-slide and inspected macroscopically. A good specimen contains glistening gold par-

ticles which are the marrow fat. If these are visible, it is probable that the aspiration has been a success.

Marrow particles are carefully transferred to slides or cover slips by means of a broken, jagged applicator stick and thin smears are made which may be stained by any of the techniques used for blood smears.

**Evaluation of Smears** Any report on a bone marrow smear should include a statement on the ease with which the specimen was taken. In hypoplastic conditions of the bone marrow as well as in myeloma there may be considerable difficulty in obtaining an adequate specimen and in the latter disease there may then be the added trouble that smears cannot be effectively made on account of the excessive rouleau formation due to the high serum globulin. These facts should be reported since they are important in diagnosis. By a careful control of aspiration technique, the operator will also be in a position to know how much his specimen has been diluted with peripheral blood.

**Cellularity** The concept of cellularity is an important one to grasp. A total count of nucleated cells can be made from a bone marrow aspirate but the method is so full of errors that it is but rarely used. In its place, the practice has been adopted of speaking of a marrow's cellularity. This merely refers to the number of nucleated cells seen per microscopic field. Naturally, very much depends upon the degree of dilution with peripheral blood and the manner in which the smears are made but yet it is surprising how useful such an evaluation can be, provided one is content with such categories as hypocellular, normocellular and hypercellular and does not attempt to add any greater re-

finements in the degree of cellularity. Hypercellular smears are seen in anemias to which there is a normal marrow response such as that following hemorrhage and in pernicious anemia. In anemias due to failure of the marrow such as the aplastic anemia caused by radiation or toxic chemicals, a hypocellular smear will be seen. Thus the marrow gives invaluable help in narrowing down the diagnostic field in cases of anemia. The number of white cells may also affect the cellularity; leukemia and leukocytosis produce hypercellularity while agranulocytosis reduces the cellularity.

**Differential Counts on Marrow Smears** In order to obtain a fair appraisal of the different types of cell present in the marrow it is essential that numerous different fields from several slides be examined. If a quantitative differential count is made, a total of at least 500 cells should be counted. The results may be given as a table and the figures compared with those published in standard textbooks. On each count there will certainly be a number of cells whose differentiation will be difficult and these should be reported as "unidentified."

Most hematologists feel, however, that a quantitative count is not necessary; the time is better spent examining a greater number of fields than recording cells individually. Thus the observer's judgment and experience are used to give a semi-quantitative expression of how far the patient's marrow differs from the normal. Workers who use this method will resort to a full count only when they have a case of particular interest or importance or as a means of checking their own impressions from time to time.

**Myeloid-Erythroid Ratio** This index expresses the relationship of the number of polymorphonuclear leukocytes and their precursors to the number of nucleated red cell elements. It is particularly valuable in view of the inaccuracy of any absolute values as already mentioned. Normally, there are about four times as many myeloid elements as erythroid elements; the M:E ratio is 4:1. Extremes of 5:1 and 3:1 are the limits of normal. Pathological conditions influence this figure by a decrease or increase in one series and so it is not necessarily apparent which of these alternatives is operative. An increase in the M:E ratio may result from an augmentation in the leukocytes as in leukemia or a depression of the red cell precursors as in aplastic anemia. By the same token a decreased M:E ratio will be seen on the one hand in agranulocytosis and on the other hand in the regenerative marrow of a patient who has just sustained a serious hemorrhage. The two series should be thought of as a pair of scales, then it will be remembered that what may appear to be a depression of one side may in fact be an elevation of the other side.

**Red Cell Precursors** The normoblast or rubriblast series consists of the cells which eventually develop into the mature erythrocytes. Elaborate nomenclatures exist which describe the appearance of the cell as it develops but these are the concern of the expert cytologist rather than the clinician. Suffice to say that the earliest form (the pronormoblast) is a large cell with a blue-staining cytoplasm and a red-staining nucleus with a meshwork of chromatin and a number of nucleoli. As development proceeds, the cell becomes smaller, the nucleoli are lost and the nuclear chro-

matin becomes more compact. Finally, the cytoplasm loses its blue staining reaction and takes on the pale pink color of hemoglobin as the cell becomes ready to enter the blood stream. There are usually about five times as many later forms as early forms but this will depend on the morphological criteria which are used. The experienced eye will easily recognize whether there is a shift to the left (increase in early forms) or a shift to the right (increase in later forms). The latter may be seen quite frequently in iron deficiency anemia. Erythroid hyperplasia with an overall increase in all the red cell precursors is seen in anemias following hemorrhage or hemolysis but these two causes will not usually be distinguishable from one another on the appearance of the marrow alone.

**Megaloblasts** The recognition that a marrow shows the megaloblastic type of erythropoiesis is one of the most important aspects of diagnosis in hematology. One learns to recognize megaloblasts by seeing enough of them; they are larger than corresponding cells of the normoblastic series, the chromatin of the nucleus is less tightly packed and stains lightly and there are frequent nucleoli. Much argument has in the past centered round the question of whether megaloblasts are present in normal marrow but the answer is not essential to the diagnostician since, in the presence of true pathological megaloblastic erythropoiesis, there is a very large number of megaloblasts in the marrow with a much increased myeloiderythroid ratio. Diagnosis depends upon the number as well as the appearance of the erythroid elements. The finding of a megaloblastic marrow is of greater importance than observations on the average

size of the red cells in the blood since in certain conditions (such as some cases of liver disease) the cells may be macrocytic although the marrow is normoblastic. The presence of megaloblastic erythropoiesis places the patient in a definitive diagnostic category including pernicious anemia, sprue, some anemias of pregnancy or childhood and certain nutritional and parasitic conditions and is the only authentic indication for therapy with vitamin B<sub>12</sub> or folic acid in hematologic practice. When therapy of this type has been instituted, the marrow reverts to the normal condition of normoblastic erythropoiesis.

**White Cell Precursors** The cells of the myeloid series, the precursors of the polymorphonuclear leukocytes, show a rich variety of morphological types. In the early myeloblast, the nucleus contains nucleoli and there are no granules in the cytoplasm. As the cell matures, becoming a myelocyte, the nucleoli disappear and granules become visible in the cytoplasm. Still later, the nucleus retracts away from the edge of the cell becoming kidney shaped and the cell is called a metamyelocyte. This is the last stage of development before the mature, segmented form which finds its way into the blood stream. Tables are available in textbooks to show the distribution of the various stages of cells in the myeloid series but again it is perhaps better to rely upon experience and familiarity with the normal to decide upon the condition of a given specimen. Normally, the myeloblasts do not make up more than about 2% of the nucleated elements of the marrow. In leukocytosis as well as in leukemia there is an increase in the total number of leukocytes but leukemia is usually readily distinguished by an inordinate increase in the

earlier forms. An occasional case may be seen where leukocytosis may be so severe as to be scarcely distinguishable from leukemia. This is the so-called "leukemoid reaction"; it is seen in tuberculosis and in certain other infectious states. In acute leukemia the earlier forms are present in overwhelming preponderance and in fulminating acute leukemias undifferentiated "blast" forms may be practically the only cells visible in the smear. It may be impossible to state whether these abnormal cells belong to the myeloid or the lymphocytic series of cells in certain cases.

**Eosinophils** Eosinophil leukocytes are increased in number in the marrow in those states which produce eosinophilia in the blood. These are certain infections and infestations and allergic conditions such as bronchial asthma. True eosinophilic leukemia is very rare but there are some instances on record which are well authenticated.

**Basophils** The little understood basophil is often conspicuous in the healing stage of infectious diseases but it is also a fairly constant feature of chronic myelogenous leukemia which may assist in differentiating this disease from a leukocytosis or a leukemoid reaction.

**Lymphocytes** The lymphocyte count is higher in children than in adults. High counts are also encountered in viral and chronic bacterial infections. Atypical appearances in these cells are important but it is a mistake to ascribe too much importance to them since this finding is not usually a specific indication of any particular disease and can be seen in cirrhosis and various viral diseases as well as infectious mononucleosis.

**Monocytes** Monocytes or myeloid



cells resembling them are seen in monocytic leukemia, usually a rapidly fatal disease, but they may also be present in quite high numbers in subacute bacterial endocarditis and in chronic infections.

**Plasma Cells** Plasma cells, though normally absent from the peripheral blood, are usually seen in the marrow where they form up to 2% of the nucleated elements. They are increased in number in many diseases of the liver and in some infections. Of interest is their function in producing gamma globulin and the fact that in agammaglobulinemia the marrow is found to be devoid of these cells.

#### **Megakaryocytes and Platelets**

No examination of the marrow is complete without a thorough low power search for megakaryocytes. Their number is very dependant upon the technique used in making the preparation but may be decreased in toxic or chemical depression of the marrow and increased in many patients with idiopathic thrombocytopenic purpura. They should be inspected closely for any abnormalities in their morphology as well as for their ability to form platelets, which appear as clusters budding off from the parent cell with the appearance of a bunch of grapes. In idiopathic thrombocytopenic purpura of the so-called megakaryocytic type the megakaryocytes are increased and their perimeters are smooth and circumscribed and fail to show platelets budding off from the surface.

**Abnormal Cells** Not infrequently, pathological cells may be seen in the bone marrow which give the essential clue to diagnosis. This is especially true in multiple myeloma where the bone marrow is an invaluable aid to diag-

nosis. The myeloma cell may either closely resemble or grotesquely caricature the normal plasma cell. While no two patients will show exactly the same myeloma cells, it is nevertheless true that any given patient with the disease will show a myeloma cell which is typical for him. In metastatic carcinoma, malignant cells may be seen in the marrow but only in a small proportion of cases. Dorothy Reed cells are sometimes seen in the marrow but in the great majority of cases of lymphoma it can only be said that there are "non-specific" marrow changes such as an increase in plasma cells and lymphocytes. These are changes which can also be produced by chronic inflammatory and neoplastic diseases. Gaucher cells and the Leishman-Donovan bodies of the kala-azar are rarities which may be encountered in marrow smears and are of great interest and diagnostic value.

#### **Risks in Bone Marrow Aspiration**

Fatalities are recorded from time to time. They result usually either from too forceful or misdirected insertion of the marrow needle or from pathological softness of the bone permitting too easy penetration. Another risk is that of bleeding from the site of puncture but this happens only rarely and can usually be avoided if care is taken to investigate the patient for any signs of hemorrhagic diathesis before the procedure is used.

Firm pressure is usually all that is required to stop any flow of blood from the puncture site.

**Bone Marrow Examination in Children** The technique used in adults is also readily applicable to children except that there may be more apprehension and it may occasionally be advisable to use general anesthesia. The



sternum is unsuitable in the child since it is thin and too easily transversed. The iliac crest or a vertebral spine may

therefore be chosen in most children but in infants under one year of age it is better to use the upper part of the tibia.

### Summary

Bone marrow aspiration is a simple and valuable diagnostic procedure which should be used early in the evaluation of many disease states.

Reports on bone marrows should include:

1. Remarks on technique and ease of obtaining the specimen.
2. An assessment of cellularity.
3. The myeloid-erythroid ratio.
4. The type of erythropoiesis (whether normoblastic or megaloblastic)

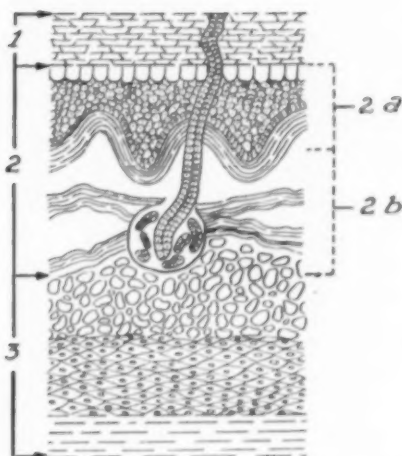
and the morphology of the mature erythrocytes.

5. An account of the frequency and morphology of all types of cells normally found: leukocytes (neutrophil, eosinophil, basophil), lymphocytes, monocytes, plasma cells, platelets and megakaryocytes.

6. Observations on any abnormal or undifferentiated cells seen.

7. The conclusion. This should take account of the clinical details if they are available.

### Clini-Clipping



### Burn Classifications

- 1-First degree burn
- 2a-Second degree burn (Superficial)
- 2b-Second degree burn (deep)
- 3-Third degree burn

Modified from Matthews "Surgery of Repair"

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# Myocardial Infarction

## Ten-year (1945-1955) Survey of Anticoagulant Treated and Untreated Patients; a Morphological Study of 134 Cases

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Acute myocardial infarction as a result of coronary artery thrombosis has been extensively studied in both the old and the recent literature and comparative study of the mortality rate of anticoagulant treated and untreated cases has been performed frequently since 1945. Although the anticoagulant therapy has become a very popular form of treatment for acute myocardial infarction, a lot of physicians still have precarious feeling regarding the indications for its use. The main purpose of this article is to determine the value of anticoagulant treatment at the onset of acute myocardial infarction as to the effect being rendered in the mortality rate and the incidence of thromboembolic complications.

As it has been pointed out by White,<sup>32</sup> the course and prognosis of coronary thrombosis are so variable that they must be considered individually in every case. The prognosis is being influenced as much by the degree and speed of involvement of the myocardium as by the treatment, the reserve strength of the myocardium, the advanced age and complications.

The immediate mortality rate of conventionally treated cases has been reported as ranging from 19 per cent to 45 per cent. These mortality rates differ significantly in the private practice, the private hospitals and the municipal hospitals being remarkably low in the first two and significantly high in the latter. Of the series of 200 cases followed by Bland and White (1941) up to the time of death, or with survival over ten years, 38 (19 per cent) died during the first month. Billings *et al.*<sup>2</sup> analyzed a group of 240 cases of acute myocardial infarction which comprised of 175 males and 65 females, a ratio of 2.7 to 1. There were 97 deaths (immediate mortality 40.4 per cent) within thirty days of the acute episode. Schnebli<sup>10</sup> reviewed the case histories of 300 patients treated from 1949 to 1954 for recent myocardial infarction at the University Hospital in Zurich. Of these, 214 were males and 86 females; the mortality during their hospital stay was 45 per cent.

There were 344 patients admitted to the St. Louis County Hospital from January 1, 1945 to January 1, 1956

with the diagnosis of acute myocardial infarction. The diagnosis was based on

- history,
- clinical findings and
- at least two consecutive electrocardiograms which revealed serial changes compatible with acute myocardial infarction except in the case of patients who expired shortly after their first electrocardiogram has been taken; when one conclusive tracing was accepted as evidence,
- autopsy findings.

**Sex** There were 225 males and 119 females, a ratio of 1.93 to 1 which corresponds with other reports.<sup>7, 8, 11, 23</sup>

**Age** Our youngest patient was 22 years of age, the oldest 91 years of age. Mean age at the time of the attack for males was 61.1, for females 67.2. As it is shown on Table I, which represents the age groups, there were 10 cases (9 male—1 female) in the 20 to 39 year age group; 40 cases (32 males—8 females) in the 40 to 49 year age group; 70 cases (43 males—22 females) in the 50 to 59 year age group; 39 cases (56 males—33 females) in the 60 to 69 year age group; 103 cases (60 males—43 females) in the 70 to 79 year age group and 33 cases (20 males—12 females) in the 80 plus age group.

In this survey of 344 patients, Table II, there were 65 males (ages ranging from 30 to 80 plus) and 43 females (ages from 40 to 80 plus) who died within 72 hours after the onset of acute attack, thus initial mortality rate is being 23.7 per cent and 36 per cent respectively. The vast majority of the patients who died during the first week of initial attack comprised of severe cases in which shock, cardiac failure and prolonged cardiac pain, accompanied by conclusive electrocardio-

graphic changes, were prevailing signs. There were 31 patients (21 males—10 females) from whom no follow-up was available since their discharge from the hospital after having been hospitalized for at least 4 weeks. Both the anticoagulant treated (14 patients) and the conventionally treated (17 patients) in this group were included in the one year survival period.

Anticoagulants were administered to 103 patients and 133 patients who had been treated on conservative lines will serve as controls. Those who died within 72 hours of initial attack are not included mainly due to the fact that anticoagulants cannot be expected to induce any effect within such a short time. The initial clinical appearance of the patients constituted the criteria for indication of anticoagulant therapy, irrespective of their age. Russek and his associates<sup>26</sup> have established a system by dividing patients into "good risk" and "poor risk" groups and emphasized the indication of anticoagulant treatment only for those who fell under the "poor risk" group by presenting one or more of the following poor prognostic signs on the day of admission to the hospital:

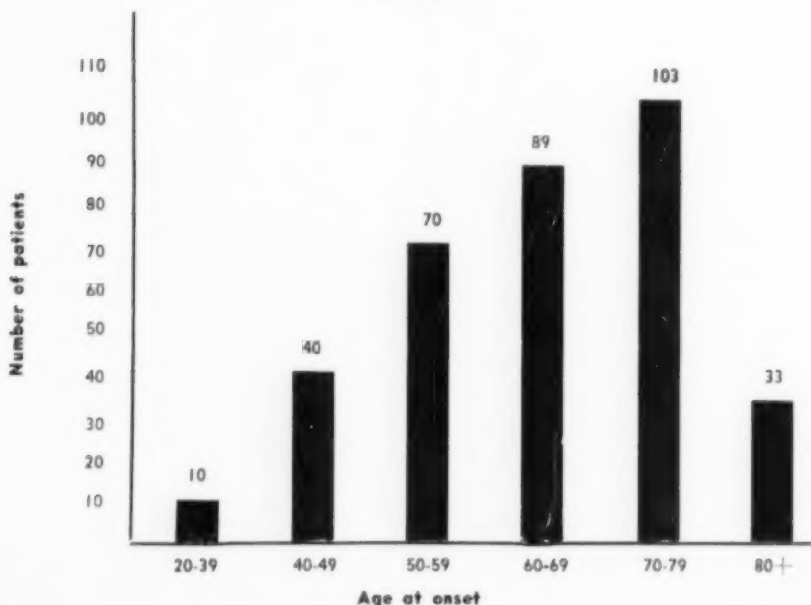
- previous myocardial infarction;
- intractable pain;
- extreme degree or persistence of shock;
- significant enlargement of the heart;
- gallop rhythm;
- congestive heart failure;
- auricular fibrillation or flutter, ventricular tachycardia, or intraventricular block; and
- diabetic acidosis or other states predisposing to thrombosis. They<sup>8</sup> have also postulated that sudden deteriora-

tion in the clinical picture of "good risk" group, during the first 48 hours following the onset of symptoms can not be prevented by anticoagulant drugs since thromboembolism plays no part in these early deaths; consequently in view of the fact that arrhythmias may cause complications and death at this period of the illness even in the "good risk" group, the routine use of quinidine rather than anticoagulants would be more beneficial during the first few days of the mild attack.

In the control group, Table II, 19 males (21.8 per cent) out of 87 males and 16 females (34.7 per cent) out of 46 females died within four weeks of initial attack after surviving from preceding 72 hour periods where as 5 males (6.8 per cent) out of 73 males and 6 females (20 per cent) out of 30

females died in the anticoagulant treated group within the same period. These findings confirm the general opinion that the mortality rate from acute myocardial infarction is higher in women than in men. As for the total mortality rate between control and anticoagulant treated groups during 4 weeks after the onset of acute attack is concerned, there were 35 deaths among the 133 cases of control group (mortality rate of 26.3 per cent) as compared with 11 deaths out of 103 anticoagulant treated cases (mortality rate of 10.6 per cent); this compares favorably with the findings reported by Wright.<sup>35</sup> In the 1.5 year period there were 55 deaths (38 males—17 females) in the control group and 40 deaths (27 males—13 females) in the anticoagulant treated group; thus total mortality rate being

TABLE I



56 per cent and 43 per cent respectively. The difference in the mortality rates is more striking in the 5-10 year period i.e., 27 per cent in the control group and 7 per cent in the anticoagulant group. These findings have been substantiated by comparison of treated and untreated patients who were reported as being alive during the preparation of this article. Of those who had been treated by anticoagulants 40 patients were alive in the 1-5 year period and 9 patients in the 5-10 year period; whereas in the control group 25 patients were alive in the 1-5 year period and 6 patients in the 5-10 year period.

The lower mortality rate in the treated group during the first four weeks of initial attack could be explained on the basis of reduction of thromboembolic phenomena as it has been stated by other authors, but at the present time there is no logical explanation for the lower mortality rate observed in the 1-5 year and 5-10 year treated groups. This could be due to existence of entirely different factors or pharmacologic property of these drugs unrelated to their anticoagulant property.

It is also noted on Table II, that patients who are in the 40-59 age groups have better chance of living five years or more if they survive the initial attack as compared with ones who are in the 60-69 and 70-79 age groups.

Out of 190 patients who survived approximately 65 per cent were incapacitated mainly by congestive failure and required maintenance on daily digitalis and low salt diet. Between 45 and 50 per cent of them complained of angina on effort. No significant difference has been observed between anticoagulant treated and untreated cases as to the

incidence of angina pectoris that had been experienced after the healing of infarction had taken place. The electrocardiograms remained abnormal in all cases which were manifested by presence of ST-T changes and/or QS deflections; in approximately 30 per cent of the cases signs of infarction persisted. Again no difference was noted pertaining to the electrocardiographic changes which persisted subsequent to the initial attack in the treated and untreated cases.

The effect of anticoagulants on the mortality rate of acute myocardial infarction has been investigated rather extensively in the recent studies. Wright<sup>34</sup> reanalyzed the Reports of the Committee on Anticoagulants of the American Heart Association, based on studies of 1031 cases (442 untreated and 587 treated) and concluded that the over-all mortality rate could be reduced significantly by the use of anticoagulants. In these series the death rate in the control group for "good risk" category was 12.9 per cent whereas the treated group had a death rate of only 7.9 per cent, a reduction of 45 per cent. The "poor risk" category's death rate was 45.2 per cent in the control group as contrasted with 35.2 per cent in the treated group.

Russek and his associates<sup>35</sup> advocated anticoagulant therapy only for "poor risk" cases. According to their findings; in 439 "good risk" cases the mortality rate without anticoagulants was 3.1 per cent and embolization 0.8 per cent compared to 60 per cent mortality and 10.6 per cent embolization in "poor risk" cases. The preventable mortality in "good risk" cases could not have exceeded 0.8 per cent if ideal anticoagulant therapy had been used.

TABLE II

Age of onset	20-29	30-39	40-49	50-59	60-69	70-79	80+	Total Dead	Alive
Survival Period	Male	Female	M	F	M	F	M	F	M
72 Hours	2		8	12	13	24	6	65	43
Control			1	3	7	7	1	28.7%	36%
Four Weeks			1	2	7	7	2	19	16
Anticoagulant			1	1	3	1	2	21.8%	34.7%
C.	2*		1	8	11	10	6	5	6
1-5 Year		1*	2*	9*	2*	2*	1*	38	17
A.	1		2	3	11	7	3	56%	
C.			8*	7*	8*	7*	1*	27	13
5-10 Year		1*	4	2	2	2	1*	48%	
A.			1*	2*	1*	1*	1*	8	4
			4*	1*	2*	1*	1*	1	2
								1	9

\* patients reported as alive during the preparation of this article.

In England Papp and Smith<sup>14</sup> reviewed 200 consecutive cases of cardiac infarction collected from consultant, general and hospital practice and divided into three groups—slight, moderate and severe. Of these, 175 were treated conservatively and 25 with anticoagulants. No death occurred among the 69 untreated patients with slight cardiac infarction at the end of two months; six men died 6 months to 4 years later (8.6 per cent); out of 39 untreated cases of moderate cardiac infarction two died within 2 months after the initial attack and another three 2 to 3 years later (12.3 per cent). Among 67 untreated severe cases 33 died (50 per cent); majority of the deaths occurred during the first two months. Only 6 out of the 21 anticoagulant treated cases with severe infarction died within a few months after the onset (21.6 per cent).

**Morphological Study** In the years of 1945 through 1955 a diagnosis of myocardial infarction was made in 132 patients at autopsy (Table III). There were 79 men and 53 women, the ratio being 1 to 1.5, the average age was 61.4 for men and 70.2 for women. The control group consisted of 117 cases compared to 15 cases in the anticoagulant treated group.

**Results Hypertension:** Of the total of 132 cases 41.6 per cent were reported as being hypertensive. The criteria for hypertension varied from 150 systolic/90 diastolic to 160 systolic/100 diastolic. The incidence of hypertension was significantly higher in females (54.7 per cent) than in males (32.8 per cent). This has been consistently observed by others.<sup>1,2</sup> The immediate mortality rate among hypertensives following acute myocardial infarction was

not different from those who had normal blood pressure. This is in agreement with the findings of Billings, et al.<sup>2</sup> Doscher and Poindexter<sup>1</sup> found that mortality rate was higher in patients with hypertension.

*Diabetes mellitus:* Among 132 cases 11.4 per cent had diabetes mellitus, the incidence was higher (17 per cent) in females (9 out of 53) compared to 7.6 per cent in males (6 out of 79). These figures compare favorably with series reported by other authors:<sup>1,2</sup> Robinson's<sup>10</sup> statistics on the same subject revealed that 3.9 per cent of men with coronary thrombosis also had diabetes compared with 21.9 per cent of women with coronary thrombosis who had diabetes.

*Serology:* The positive serology was obtained in 7 per cent of the total group. Males were leading with 10.1 per cent over females 3.7 per cent.

*Angina:* Out of 132 patients 44.7 per cent gave history of previous angina pectoris (45 per cent of males and 23.3 per cent of females). Lee, et al.<sup>18</sup> also found that only 50 per cent of their 429 patients had a history of previous angina pectoris. The incidence of angina pectoris in the other series varied from 20 to 70 per cent.

*Pain:* The pain was frequently located in the precordial and substernal regions but epigastric pain had also been experienced occasionally. The term of pain included "discomfort," "constriction in chest" and "burning sensation in the precordial region." Among the 132 patients 60 (47 per cent) complained of pain, of these 44 were males (60.2 per cent) and 18 were females (34 per cent). No pain and discomfort was present in 72 patients (53 per cent). It is noteworthy that silent

myocardial infarction had been reported quite frequently but statistical figures on this subject vary widely. Patients are expected less likely to experience pain if congestive failure is already present at the time of onset of symptoms of acute myocardial infarction. In our series congestive failure was present in 79.5 per cent of the cases which could be a contributing factor for such a high incidence of painless infarction. Roseman<sup>11</sup> found only 10 patients (4.5 per cent) with painless infarcts in a series of 220 cases of myocardial infarction. No pain and discomfort was present in 20 patients (10 per cent) of the Billings<sup>2</sup> cases. Lee, et al.<sup>18</sup> reported that 36 per cent of 429 patients with fatal acute myocardial infarction did not complain of chest pain.

*Location and size of infarct:* There were 67 infarcts (43.5 per cent) of anterior wall of the myocardium, 40 infarcts (30.3 per cent) of the posterior wall of the myocardium, 11 infarcts (12.1 per cent) of the septum and 12 (9 per cent) infarcts located in the apical region. Size of the infarcts was extensive in 39.3 per cent, medium in 53.7 per cent and small in 6.3 per cent.

In addition to fresh infarction 62 per cent had anatomic evidence of old infarction; of these only 17 per cent gave history of previous infarction.

*Thromboembolic phenomena:* This term constitutes: (a) mural thrombi, (b) pulmonary emboli, (c) systemic emboli which are considered as complicating evidence of acute myocardial infarction.

a—Mural thrombi: Mural thrombi was demonstrated in 34 (29 per cent) of the total of 117 control group cases as compared to 3 cases (20 per cent) in the anticoagulant treated cases. In

the majority mural thrombus was located in the ventricles. Howell and Kyser<sup>3</sup> reported that 54 per cent of control group patients had mural thrombi whereas it was demonstrated in only 29.5 per cent of the anticoagulant group patients. These are in disagreement with the findings of Lee and O'Neal<sup>15</sup> who found 40 per cent incidence of mural thrombi in the untreated group and 44 per cent in the treated group. In their adequately treated patients the incidence of mural thrombi was 52 per cent had therapy begun after three days of the clinical onset of myocardial infarction; whereas

in patients in whom therapy was started within three days after the onset mural thrombi was demonstrated in only 40 per cent.

b—Pulmonary emboli: 25 cases (21.3 per cent) of the control group cases disclosed pulmonary emboli, however, no pulmonary emboli was demonstrated in the anticoagulant treated cases.

c—Systemic emboli: In the control group 15 cases (13 per cent) were found to have systemic emboli whereas in the treated cases no evidence of systemic emboli was detected.

In our cases total incidence of

TABLE III

	Control		Anticoagulant	
	MALE: 73	FEMALE: 44	MALE: 6	FEMALE: 9
Average Age	66.5	65.5	56.3	75
Hist. of Hypertension	24	25	2	4
Hist. of Diabetes	6	9		
Hist. of Positive Serology	7	1	1	1
Hist. of Congestive Failure	54	38	5	8
Hist. of Angina	26	11	7	4
Chest Pain	38	11	6	7
Size of Location Infarct of Infarct	Anterior	20	2	5
	Posterior	16	2	2
	Septal	3	1	1
	Apical	5	1	1
Size of Location Infarct of Infarct	Extensive	15	3	5
	Medium	25	3	3
	Small	4	0	1
Healed Infarct	47	27	5	3
Old Infarct with Hist. of Previous Infarct	9	1	3	1
Mural Thrombi	19	15	2	1
Pulmonary Emboli	17	8	0	0
Systemic Emboli	6	9	0	0
Rupture of Ventricle	2	1	1	1
Rupture of Septum	2			
Hemopericardium without Myocardial Rupture	0	0	0	0
Ventricular Aneurysm	2	3	1	0
Cholecystitis	12	19	1	1
Elevated Diastase	2	2		



thrombo embolic phenomena was found as 63.2 per cent in the control group and 20 per cent in the treated group. Although our treated group comprises a small number of cases above statistical figures prove that anticoagulant therapy diminishes the incidence of thrombo embolic phenomena in significant number of cases.

**Gallbladder disease:** In this series 25 per cent of a total of 132 cases disclosed pathological evidence of cholecystitis or gallstones with or with abnormally thickened gallbladder. This occurred more often in females (37.7 per cent) than in males (16.4 per cent).

It has been a quite well known fact that there is certain unexplained relation between coronary artery disease and diseased gallbladder. The coincidence of the two conditions in the same individual has also been emphasized by Walsh, et al.<sup>28</sup> who found 122 patients (21 per cent) with diseased gallbladder among 576 patients with coronary artery disease, whereas, gallbladder disease was noted in only 142 (11.5 per cent) in the patients with normal coronary arteries. The preponderance of females over males has also been stressed.

**Elevated diastase:** In our cases serum diastase determination had been done at random on patients with acute myocardial infarction. In autopsied cases 3 per cent revealed serum diastase levels being above 400 mg. %. Careful study of their pancreas failed to reveal any signs of pancreatitis nor other abnormalities, which could diastase elevation be ascribed to, had been demonstrated.

In the case of E. V. (73-year-old, white female) serum diastase was re-

corded as high as 1140 somogy units. In view of the high serum diastase and the findings in the serial electrocardiograms which indicated only coronary insufficiency the diagnosis of acute pancreatitis had been entertained. Post mortem examination revealed extensive organizing myocardial infarction of left ventricle and interventricular septum due to thrombotic luminal occlusion of descending branch of left coronary artery. The pancreas was found of usual size and configuration disclosing no gross abnormalities either on their external or cut surfaces. Microscopic sections of the pancreatic parenchyma revealed the usual lobular pattern with slight fatty infiltration into the lobules.

Characteristic electrocardiographic changes induced by acute pancreatitis have been frequently observed by other authors.<sup>29-31</sup> Thus far no mention has been made as to the occurrence of high serum diastase as a result of acute myocardial infarction. The etiology of this is unknown although the effect of anoxia in the central nervous system could be considered as a causative factor.

**Myocardial Rupture** Rupture of the heart in the absence of traumatic or infectious processes (abscess) is almost always due to myocardial infarction from coronary artery occlusion. This fatal complication of myocardial infarction has been considered as a rarity until recent years and its clinical aspects have not as yet been completely evaluated.

**Incidence, Age, and Race:** Myocardial rupture occurred in 6 patients (4 males and 2 females) of our series of 132 patients with myocardial infarction proven at autopsy (Table IV), the

TABLE IV

Case 1. (Y.E.) Case 2. (F.F.) Case 3. (E.T.) Case 4. (P.S.) Case 5. (G.R.) Case 6. (T.M.)

Age	71	74	58	50	45	75
Sex	Male	Male	Male	Female	Male	Female
Race	White	White	White	White	Color	White
Symptoms and Signs	Dyspnea Cyanosis Unconsciousness	Dyspnea Cyanosis Precordial pain with radiation	Dyspnea Cyanosis Precordial pain Vomiting	Dyspnea Cyanosis Precordial pain with radiation	Dyspnea Precordial pain with radiation Nausea, Vomiting	Dyspnea Substernal, epigastric pain with radiation. Nausea, Vomiting, dizziness
Hypertension	0	0	0	Yes	0	Yes
Hist. of previous heart attack	0	0	0	0	Yes	Yes
Angina	0	Yes	0	0	Yes	Yes
E.K.G.	was not taken	was not taken	was not taken	Anterior wall infarction, recent	Posterior infarction, recent ventricular tachycar.	Posterior infarction, recent
Murmurs	Apical systolic murmur (Grade III) No thrill 2 days	Apical systolic murmur (Grade II) No thrill 2 weeks	0	0	0	0
Duration of Infarct			1 hour	16 days	7 days	14 days
Survival Time			20		30	45
After Rupture				3		
Hemopericardium	0	300 cc.	200 cc.	500 cc.	massive	massive
Size of Tear	2 1/2 x 2 cm.	2 cm.	5 mm.	1 cm.	3 cm.	not recorded
Location	Interventricular Septum, upper third	Interventricular Septum, right ventricular, posterior	left ventricle, posterior	left ventricle, anterior	left ventricle, posterior	left ventricle, posterior
Changes in coronary arteries	Thrombosis of right coronary artery	Thrombosis of right coronary artery	Thrombosis of the circumflex of left coronary artery	Thrombosis, anterior descending branch of left coronary artery	Thrombosis of right coronary artery	Embolism, 2 cm. from the origin of right coronary artery
Healed Infarct	0	0	Yes	0	0	0
Recent Infarct	Yes	Yes	Yes	Yes	Yes	Yes
Treatment	0	0	0	Digitalis Quinidine	Dicumarol Pronestyl	Dicumarol Quinidine

average incidence being 4.7 per cent; of these only one patient was among 32 cases with old infarcts (incidence of 1.2 per cent) and 5 were among 50 cases of fresh infarcts (incidence of 10 per cent). Their ages ranged from 45 to 75 years, averaging 62, and there were 4 whites and one negro. These figures are in close agreement with other authors' reports.<sup>21-24, 33</sup>

**Symptoms and Signs:** Symptoms on admission mainly consisted of dyspnea, precordial pain with radiation, nausea and vomiting. History of hypertension and previous heart attack were recorded in two patients only. Half of the group denied angina, two patients had complained of anginal pains three to four months and one patient one year. Electrocardiograms which were done on three patients were compatible with recent myocardial infarction. Cardiac auscultations revealed grade II and III apical murmurs consecutively in two patients in whom interventricular septal ruptures were present. No thrills had been palpated.

**Duration of Infarct:** Clinical observations indicated that one patient (16.6 per cent) died within 24 hours after the onset of chest pain; 2 patients (33.3 per cent) died during the first 7 days and 3 patients (49.3 per cent) died 2 weeks after the onset of acute myocardial infarction. The average duration of infarction was 9 days. This is corresponding with the findings of others that rupture of the heart occurs within ten to fourteen days after the onset of myocardial infarction.

**Survival Time After Rupture:** Death occurred rapidly after the occurrence of rupture, 3 patients expired within twenty to forty-five minutes after the rupture, 2 patients expired after two to

three hours and only one survived approximately 72 hours.

**Hemopericardium:** There were two patients with massive hemopericardium; in three patients between 200 to 500 cc. blood was found in the pericardial sac, only one patient with interventricular septal rupture did not have blood in the pericardial sac.

**Size of Tears.** The tears resultant of rupture of the infarcted myocardium may vary from tiny, pin point apertures to large, linear, tortuous tears. In our cases size of tears was varying from 5 mm. to 3 cm.

**Location:** Of six ruptures 4 were through the left ventricular wall, 3 of them through the posterior wall and one through the anterior wall. Only in one patient rupture was located in the upper third of the interventricular septum. There was one patient with unusual type of perforation in whom both the posterior right ventricular wall and the interventricular septum were ruptured.

**Changes in the Coronary Arteries:** Three patients disclosed thrombotic occlusion of the right coronary artery. There were two patients with thrombosis of the left coronary artery, one was located in the circumflex branch and the other in the descending branch. Embolism was demonstrated in one patient, located 2 cm. from the origin of the right coronary artery.

**Treatment:** In three patients who died shortly after their arrival at the hospital treatment consisted of cardio-respiratory stimulants and oxygen, none of them were given any specific medication. On the other hand, among the remaining three patients, two were treated with dicumarol and pronestyl, quinidine and the other with digitalis and quinidine.

Effective anticoagulation was accomplished in 15 of our patients, two of them developed myocardial rupture thus incidence being 13.3 per cent. The incidence of myocardial rupture has been reported<sup>21, 26</sup> as being significantly higher in the anticoagulant treated cases than in the conventionally treated

cases. It has been postulated that if myocardial rupture begins as a small tear in the infarcted muscle, with diminished coagulation of the blood, prompt sealing of this defect would be less likely to occur, and rupture would seem more probable.

### Summary

The value of the anticoagulant treatment at the onset of acute myocardial infarction has been investigated in regards to the effect being rendered in the mortality rate and the incidence of thromboembolic complications.

There were 344 patients admitted to the St. Louis County Hospital from January 1, 1945 to January 1, 1956 with the diagnosis of acute myocardial infarction. The ratio of males to females was 1.93 to 1 respectively. Ages varied from 22 to 91, average age for males was 61.1, for females 67.2. The initial mortality rate was 28.7 per cent in males and 36 per cent in females.

Anticoagulants were administered to 103 patients excluding those who died within 72 hours of initial attack and 133 patients who had not been treated by anticoagulants served as controls. The total mortality rate during four weeks after the onset of acute attack was 26.3

per cent in the control group as compared with 10.6 per cent in the treated group. Lower mortality rates also noted for 1-5 year and 5-10 year period patients in the treated group for which no explanation could be elucidated.

Patients who are in the 40-59 age period have better chance of living five years or more if they survive the initial attack.

A morphological study has been made on 132 patients who came to autopsy in the years of 1945 through 1955. The total incidence of thromboembolic phenomena was found as 63.2 per cent in the control group and 20 per cent in the treated group.

The elevation of serum diastase in acute myocardial infarction due to coronary thrombosis has been discussed.

A clinical and pathological evaluation of six myocardial rupture cases has been performed.

### References

1. Doscher, N., and Polindexter, C. A.: Myocardial infarction without anticoagulant therapy. *Am. J. Med.* 8:623, 1950.
2. Billings, F. T., Jr., Kalstone, B. M., and others: Prognosis of acute myocardial infarction. *Am. J. Med.* 7:356, 1949.
3. Howell, D., and Kyser, F. A.: The effect of anticoagulant therapy upon the development of mural thrombosis following myocardial infarction. *Ann. Int. Med.* 40:694, 1954.
4. McCombs, R. P.: *Internal Medicine*. Sixth ed., Chicago, 1956. The Year Book Publishers, Inc.
5. Schnur, S.: Mortality rates in acute myocardial infarction: I. The "normal" yearly variation and the effect of hospital admission policy. II. A proposed method for measuring quantitatively severity of illness on admission to the hospital. *Ann. Int. Med.* 39:1014 (Nov.) 1953.
6. Russek, H. I., and Zohman, B. L.: Selections

- of patients for anticoagulant therapy in acute myocardial infarction. *Am. J. Med. Sc.*, 228:133 (Aug.) 1954.
7. Furman, R. H., and others: An evaluation of anticoagulant therapy in myocardial infarction based on prognostic categories. *Am. J. Med.*, 14:681 (June) 1953.
8. Holten, C.: Anticoagulants in the treatment of coronary thrombosis. *Acta. Med. Scandinav.*, 140:340-348, 1951.
9. Nichol, E. S., Phillips, W. C., and Jenkins, V. E.: Anticoagulants in coronary artery disease. *M. Clin. North America*, 38:399 (March) 1954.
10. Robinson, J. W.: Coronary Thrombosis in diabetes mellitus: analysis of 54 cases. *New England J. Med.*, 246:332, 1952.
11. Roseman, M. D.: Painless myocardial infarction: A review of the literature and analysis of 220 cases. *Ann. Int. Med.*, 41:1, 1954.
12. Schnur, S.: Mortality rates in acute myocardial infarction. III. The relation of patients age to prognosis. *Ann. Int. Med.*, 41:294-298, Aug., 1954.
13. Saphir, O., Priest, W. S., Hamburger, W. W., and Katz, L. N.: Coronary Arteriosclerosis, Coronary Thrombosis and Resulting Myocardial Changes. *Am. Heart J.* 10:762-792, 1935.
14. Papp, C., and Smith, K. S.: Prognosis and treatment of cardiac infarction: Survey of 200 patients. *Brit. M. J.* 1:1471 (June 30) 1951.
15. Lee, K. T., O'Neal, R. M.: Anticoagulant Therapy of Acute Myocardial Infarction. *Am. J. Med.*, 21:555, 1956.
16. Schneibli, M.: The Clinic of Myocardial Infarction. *Cardiologia*, 26:129 (Fasc. 3), 1955.
17. Weinreb, H. L., German, E., and Rosenberg, B.: A Study of Myocardial Infarction in Women. *Ann. Int. Med.*, 46:285, 1957.
18. Lee, K. T., and others: Clinical and Anatomic Features in Five Hundred Patients with Fatal Acute Myocardial Infarction. *Circulation*, 15:97, 1957.
19. Ernstene, A. C.: Differential Diagnosis of the Pain of Coronary Heart Disease. *Ann. Int. Med.*, 46:247, 1957.
20. Berman, B., and McGuire, J.: Cardiac Aneurysm. *Am. Med. J.*, 8:480, 1950.
21. Turnbull, G. C., and Howell, O. H.: Spontaneous Rupture of the Heart Following Acute Myocardial Infarction. *J. Lab. and Clin. Med.*, 34:1759, 1949.
22. Waldron, B. R., Fennell, R. H., Castleman, B., and Bland, E. F.: Myocardial Rupture and Hemopericardium Associated with Anticoagulant Therapy: A Postmortem Study. *New England J. Med.*, 251:892, 1954.
23. Askey, J. M., and Edwards, A. F.: Rupture of the Heart Muscle in Association with Coronary Arterial Disease. *Am. Practitioner and Digest of Treat.*, 1:15, 1950.
24. Diaz-Rivera, R. S., and Miller, A. J.: Rupture of the Heart Following Acute Myocardial Infarction. *Am. Heart J.*, 35:126, 1948.
25. Edmondson, H. A., and Hoxie, H. J.: Hypertension and Cardiac Rupture. A Clinical and Pathological Study of 72 Cases, in 13 of which Rupture of the Interventricular System Occurred. *Am. Heart Journal*, 24:719, 1942.
26. Maher, J. F., Mallory, G. K., Laurenz, G. A.: Rupture of the Heart After Myocardial Infarction. *N. England J. M.*, 255 (1) 5 July, 1956.
27. Littmann, D.: The Prevention of Thromboembolism in Acute Coronary Artery Disease. *New England J. Med.*, 247:205 (Aug. 7) 1952.
28. Walsh, B. J., Bland, E. F., Taquini, A. C., and White, P. D.: The Association of Gallbladder Disease and of Peptic Ulcer with Coronary Disease: A Post-mortem Study. *Am. Heart J.*, 21:689, 1941.
29. Baurlein, T. C., and Stobbe, L. H. O.: Acute Pancreatitis Simulating Myocardial Infarction with Characteristic Electrocardiographic Changes. *Gastroenterology*, 27:861, 1954.
30. Gottesman, J., Casten, D., and Beller, A. J.: Changes in Electrocardiogram Induced by Acute Pancreatitis: Clinical and Experimental Study. *J.A.M.A.*, 123:892, 1943.
31. Dittler, E. L., and McGavack, T. H.: Pancreatic Necrosis Associated with Auricular Fibrillation and Flutter: Report of Case Simulating Coronary Thrombosis (Autopsy Findings). *Am. Heart J.*, 16:354, 1938.
32. Kennedy, J. A.: The Incidence of Myocardial Infarction without Pain in 200 Autopsied Cases. *Am. Heart J.*, 14:703-709, 1937.
33. White, P. D.: *Heart Disease*, 4th Edition New York, 1951. The Macmillan Co.
34. Wright, I. S.: An Evaluation of Anticoagulant Therapy. Seminar on Blood Coagulation. *Am. J. Med.*, 14:720 (June) 1953.
35. Wright, I. S., Beck, D. F., and Marple, C. D.: Myocardial Infarction and its Treatment with Anticoagulants. *Mod. Concepts Cardiovas. Dis.*, 23:208 (Jan.) 1954.
36. Russek, H. I., and Zohman, B. L.: "Selective Versus Routine Use of Anticoagulants in Acute Myocardial Infarction. *J.A.M.A.*, 156:1130 (Nov. 20) 1954.

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# **"Slant" Technic for the Extirpation of Ingrown Toenails**

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Some surgical procedures of possible questionable value are passed along in certain textbooks. Few doctors have the temerity to question such methods. The modern treatment for this difficulty can be very brutal for the patient. I have seen the toenails of many patients mangled beyond repair from the use of some current surgical procedures which advocate the removal of the lateral portion of the involved nail and also the nail bed.

According to Lewis,<sup>1</sup> an ingrown toenail results from the outer edge of the toenail which invades its adjacent soft tissue. The medial and lateral portions of the toenail on the large toe grow downward and produce pressure on the neighboring tissues. Lewin states that ill-fitting shoes help to cause this difficulty. Moseley<sup>2</sup> feels that the improper care of the toenails can produce ingrown nails. Many authorities agree that this trouble is caused by those patients who trim down the corners of these toenails. Hence, the further growth pushes the deformed nails into the adjacent soft tissues of the toes which causes further pain and tenderness in such areas. Some

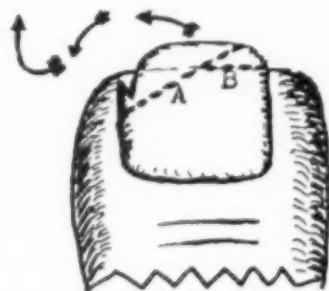
clinicians claim that the hypertrophied soft tissue near the involved area grows into the depression which remained after removal of the toenail protrusion.

Some authorities advocate planing down the medial aspect of the involved toenail so it will bend and then yield to tissue pressure. Some surgeons advocate the extirpation of the lateral aspect of the involved nail with its bed. The apparent logic behind such a method is to remove the irritating portion of the toenail. Yet, nothing is mentioned which concerns the return of the previous condition just as quickly as the involved nail area grows back. Furthermore, if the nail is deformed because of previous surgical procedures, it becomes far more difficult to correct, once this nail bed is deformed by such surgical procedures.

Ingrown toenails can be very debilitating.<sup>9, 10, 11</sup> Although this condition is considered to be of rather minor importance, nevertheless this debility occurs often enough to be classified as a very common disorder which demands prompt and efficacious relief measures.

Some obvious misconceptions have become associated with this condition

Schematic Drawing of an ingrown toenail showing lines of nail incision ("Slant" technique, Marshall).



A. Primary incision (slant)

B. Secondary incision (horizontal)

Arrow shows direction for rotating cut border of nail in order to free incarcerated nail point which forms the ingrown portion of the nail.

Sharp manicure scissors are used to cut the nail. No local anaesthetic is usually needed to complete procedure.

The remaining top portion of the nail can be shortened by cutting it horizontally to avoid tearing the patient's hosiery. The patient returns for further observation when necessary.

throughout the years. A good example of such a questionable procedure is to be found in the following statement: "We call it ingrowing toenail but the condition is really overgrowing skin."<sup>3</sup> Any clinician who has removed numerous ingrown toenails may agree that such a statement is not true. The ingrowing nail point which invades its adjacent tissue demonstrates it is the real source of irritation which produces the patient's disability.

Another startling misconception, related to this highly painful disorder, is "ingrown toenail is the direct result of wearing of improper shoes. The most important cause is weak foot. Both factors must be considered in treatment, operative or otherwise."<sup>4</sup> Improperly fitting shoes press upon the adjacent

tissue which put additional pressure upon the protruding nail hook. But by no possible stretch of the imagination can outside pressure actually produce a protruding nail point. *This anomaly can only be produced by the improper clipping of the toenail.* For when the patient cuts his toenails, he neglects to cut off the nail entirely. He leaves a nail point which, as it grows later, impinges upon the adjacent soft tissues of the toe. A so-called weak foot obviously has little if anything to do with this disorder. The wearing of improper tight shoes merely exerts added pressure upon the protruding nail point which causes the intense pain associated with ingrown toenail.

According to an authority<sup>5</sup> "ingrowing toenail is sometimes due to lateral hypertrophy at the edge of the nail, by usually forcing the soft tissues over the margin of the nail . . . infection arises." The lateral margin of the patient's toenail can become bent medially. However, this is rather rare, and can be produced by ill-fitting shoes. Hypertrophy of the edge of the nail, or of the entire nail, can be caused by ringworm infection (onychomycosis). I doubt if nail hypertrophy can occur without the presence of infection. But the adjacent soft tissues can hypertrophy and fill up the fossa which was left by the removal of the ingrown toenail point. This tissue mass is composed often of loose debris which fills this fossa. It can be removed easily by gently probing this fossa with a manicure scissors.

The usual operation for ingrown toenail is the Watson-Cheyne procedure.<sup>6</sup> The first step consists of an incision along the nailfold which produces a nail flap just adjacent to the ingrowing nail. The second step consists of removing less than one-half of this nail plus the



diseased tissue, which procedure destroys the nailfold. The final step consists of replacing the flap on a level below the nail and inserting several sutures to close the wound. This surgical method is radical, and it produces a marked and permanent deformity. Hence, its use is not advised unless no other simpler procedure is available. To date, I have not had to employ this radical procedure, since the "slant" technic has sufficed in the 117 cases I have treated to extirpate these offending nail points within a 15 year period since this procedure was first published.<sup>2</sup> Since that time I have had an opportunity of discussing this "slant" method with several members of the Board of Orthopedic Surgery. These colleagues mentioned that they personally prefer the "slant" procedure over the more radical methods, since the "slant" method does not produce a nail deformity if performed completely and correctly. It is not debilitating for such cases. The procedure is very simple to perform, and no anaesthetic agents are needed, since the method should not cause the patient further pain.

Heifitz<sup>3</sup> divided the treatment of ingrown toenails into 3 stages. Early inflammation of the nail wall constitutes the first stage. This form should be treated conservatively. The period of drainage marks the second stage. Closely trimmed nails makes it difficult for the use of conservative measures, and in such a case, operative measures must be employed. This last stage is the period of granulation, which should receive operative treatment, according to Heifitz.

In this paper we are interested mainly in Heifitz' first stage. Many physicians pack the involved area with cotton. But some doctors make a longitudinal groove

by filing the center of the involved nail so that the border of the nail can be raised, and the pressure on this area becomes lessened. The "slant" method can be used in the first stage if the patient has not trimmed his nails too closely. But if the nail has been cut too close to the toe, this method might be difficult to perform. In such a case, I advise that the patient wait, if at all possible, until the nail has grown out a bit. But in an emergency, this nail is usually long enough to perform the "slant" method in order to establish a fulcrum or a lever so that the attached offending nail point can be removed *en toto*.

**Author's "Slant" Procedure** If done properly, this simple method will bring immediate relief to the patient who usually can be discharged walking normally while he limped into the office at the onset. More radical measures can be used if this method fails, although to date, such has not been the case. 117 consecutive cases have been treated by this method without difficulty.

This "slant" operation can usually be done with a sharp manicure scissors and without the use of an anesthetic. The entire surgical area is cleansed with soap and water after the debris is removed from below the nail with a nail file or the end of a mosquito forceps. The primary and most important nail incision (marked A on illustration) is made with a sharp nail scissors on the elongated and overgrowing end of the nail. This cut is begun usually near the center point of the involved toenail and is carried laterally as a "slant" and *below* the protruding nail point. Care must be exercised to be certain that the nail area just below this ingrown nail area has been severed completely. If this area is severed only partially, it may tear off and



leave another protruding point which ultimately will have to be extracted again at a later date.

The operator then grasps firmly the "lever" made by the original "slant" incision of the nail. Then this lever or fulcrum is elevated and rotated towards the ingrown nail area. Hence, the entire ingrown nail with its fulcrum is removed *en toto* with practically no pain nor hemorrhage.

The operator should then examine the newly formed fossa which housed the ingrown nail incarceration. There is usually a great deal of macerated loose tissue there. It is removed carefully with the scissors point or the end of the

mosquito hemostat. While probing this area carefully, the operator can assure himself that he has completely removed the entire nail point. An antiseptic solution is then applied to the entire area. The rest of the toenail is then cut horizontally (incision B) to straighten the remaining edge of the toenail in order that the patient avoid tearing his socks. No dressing is usually needed, nor was it in our series of cases.

This uncomplicated and rather simple procedure has proved to be exceedingly handy to treat incarcerated toenails adequately. Furthermore, our patients have been very grateful for this efficacious therapy.

### References

1. Lewin, Philip in Textbook of Surgery by F. Christopher, W. B. Saunders Co., Phila. 3rd Ed. 1943, page 542.
2. Moseley, H. F.: Textbook of Surgery. C. V. Mosby Co., St. Louis, 1952, pages 795-6.
3. DaCosta's Modern Surgery. W. B. Saunders Co., Phila. 1931, page 82.
4. Whitman, R.: Treatise on Orthopaedic Surgery. Lea and Febiger, Phila., 1923, pages 760-1.
5. Vide supra (3), page 1155.
6. Thomik, M.: Modern Surgical Technic. J. B. Lippincott Co., Phila. 2nd Ed., 1949, pages 1349-50.
7. Marshall, W.: The "Slant" technique for the removal of ingrown toe-nails (Onyxia) prior to the granulation stage. Tri-State M. J., Aug., 1942.
8. Heifitz, C.: Ingrown toenail. Am. J. Surg. 38:299-315 (Nov.), 1937.
9. Martin, M.: Ingrown toenail. Its cause and management. Urol. and Cut. Rev. 41:253, 1937.
10. Lynch, A.: Treatment of ingrown toenail. South. Surgeon 8:173, 1939.
11. Kendall, A. W.: Infections of the foot and ingrowing toenail. The Practitioner 136:404, 1936.

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# Coronary Heart Disease

## Prognostic Factors with Particular Reference to the "Psyche"

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An analysis of two series, each of 100 patients: Group A (Dead) and Group B (Living) is presented.

**Introduction** Although obliged always to make due allowance for the uncertainty of outlook bequeathed each patient afflicted with coronary heart disease, the physician, by a careful analysis of certain recognized prognostic factors, may assay the prognosis of his coronary patient with some degree of understanding. In our own medical community, particularly at the Frisbie Memorial Hospital, where there has been an excellent opportunity to have close personal observation of patients and where an adequate cardiac history is obtained with each electrocardiogram, it has seemed to us that for the most part the trend in prognosis for patients with coronary heart disease, particularly acute myocardial infarction, has followed the anticipated pattern, but not always so. In an effort to obtain specific insight to these prognostic factors and their relationship to both the living and the dead, two series of patients—each represented by 100 consecutive clinical records—were analyzed. One

series, Group A, included patients who have died of coronary heart disease and the other series, Group B, included patients who have recovered from one or more verified myocardial infarctions and in many instances now live fairly normal lives. Only those case records were included wherein the author in one capacity or another had personal acquaintance with the patient and the general course of his illness and life.

**Hypertension as a Prognostic Factor** Hypertension was accepted as a reality in a given patient only if repeated blood pressure determinations consistently showed both the systolic and the diastolic readings to be above 150 and 95, respectively. No effort was made to correlate X-ray and electrocardiographic evidence of more or less non-transitory anatomical changes of ventricular hypertrophy and/or "strain" with hypertension but it was clearly seen that evidence of left ventricular hypertrophy and/or strain either before or after an acute myocardial infarction added material gravity to the outlook of a patient with coronary heart disease.

There are other incidental observa-

TABLE 1 INCIDENCE OF HYPERTENSION

AGE	Group A Dead		Group B Living	
	TOTAL	THOSE WITH HYPERTENSION	TOTAL	THOSE WITH HYPERTENSION
Under 40	2	0 0%	5	1 20%
41 to 49	11	4 36%	7	2 30%
50 to 59	28	11 40%	29	9 31%
60 to 69	38	21 55%	25	11 44%
70 to 79	18	11 61%	22	10 45%
80 plus	3	1 33%	12	1 8%
TOTAL	100	48%	102	34%

tions of particular interest. It was noted that a few patients after having had an acute myocardial infarction with recovery tended thereafter to run lower blood pressure readings. It is our impression that this phenomenon favors an improved prognosis. Another observation of particular interest observed in 4 of the patients in the 80 plus age group (one from group A (dead) and three from group B (living)) is that after carrying a hypertension with systolic and diastolic readings of about 200 and 120, respectively, for over 20 years, as revealed by history, these 4 patients carried essentially normal or near normal blood pressure readings in their late years. Each of these 4 cases had had one or more myocardial infarctions, following which there persisted well-advanced degenerative changes including conduction abnormalities and left ventricular strain. These patients were perfectly content to live restricted lives, undoubtedly the secret to the relative absence of significant heart symptoms.

As to table 1, the figures tell the story. There is approximately a 10% higher incidence of hypertension in the coronary patients of Group A (dead) than in Group B (living). It is to be

pointed out, however, that this higher incidence tends to be less apparent in the youngest age level (under 40) and in the oldest age level (80 plus) of Group A (dead) than in the same age categories of Group B (living). This suggests that there must be prognostic factors other than hypertension to explain this observation.

**Angina Pectoris as a Prognostic Factor** Our diagnosis of angina pectoris either preceding or following an attack of myocardial infarction is essentially a clinically determined diagnosis. It is based upon the occurrence of substernal or deep-seated characteristic chest pain, rather self-limited, generally extending upwards with or without pain or paresthesia of one sort or another into the left or right or both arms and relieved by rest, relaxation or nitroglycerin. The fact that all the patients included in both series A (dead) and series B (living) demonstrated clinical and electrocardiographic evidence of myocardial infarction one or more times in the course of the period of observation is taken to be confirmation that clinical diagnosis of angina pectoris in these 200 patients studied was correct.

Table 2 shows several enlightening

TABLE 2 INCIDENCE OF ANGINA

AGE	Group A Dead			Group B Living		
	TOTAL	THOSE WITH ANGINA		TOTAL	THOSE WITH ANGINA	
Under 40	2	1	50%	5	1	20%
41 to 49	11	6	55%	7	4	57%
50 to 59	28	20	80%	29	11	38%
60 to 69	38	27	71%	25	15	60%
70 to 79	18	12	67%	22	9	41%
80 plus	3	3	100%	12	7	47%
TOTAL	100		69%	100		47%

observations. The 22% higher incidence of angina pectoris in Group A (dead) as compared to group B (living) suggests that this entity adds prognostic gravity to a patient with myocardial infarction. It is noted that there is an appreciably higher incidence (80%) of angina pectoris among the patients statistically most eligible for myocardial infarction (age 50 to 59) who die as compared to those who recover (38%) in the same age group. Though the number is insufficient for a safe conclusion, it is pointed out that there is a relative low incidence of angina in patients at the age of 40 or less who recover (20%) as compared to those of the same age group who do not recover (50%). The equally high incidence of angina (about 55%) in patients aged 41 to 49 in both Group A (dead) and Group B (living) may have some bearing upon the patient's status in life from the point of view of family and wage earning responsibilities. This item will be further discussed later. The patients who recover from myocardial infarction tend to have angina pectoris thereafter. Two living patients, one a physician aged 39, and the other a retired shoe factory superintendent aged 34 have had angina pectoris at least 40

years. Both are well-disciplined individuals without apparent financial worries. In fact, though not shown in table 2, our personal observation is that angina patients who are well-disciplined in their pattern of living especially as concerns such items as exertion, emotion, diet, and tobacco do much better, prognostically, than those lacking this general characterization. They consequently require less frequent or no nitroglycerin. Excessive use of nitroglycerin without due adjustment of the factors responsible for anginal spells adds gravity to this prognosis and, it seems to us, enhances the development of a fatal coronary occlusion with infarction.

**Multiple Myocardial Infarctions as a Prognostic Factor** It is common knowledge that after the first myocardial infarction, each succeeding one carries with it greater apprehension for the patient's future. Table 3 bears this out. Group A (dead) shows more than twice the incidence of multiple infarction than Group B (living). What was said essentially as concerns angina can likewise be repeated as concerns multiple infarction from the prognostic point of view. There is an appreciably higher incidence (36%) of multiple infarctions among the patients statistically

TABLE 3 INCIDENCE OF MULTIPLE MYOCARDIAL INFARCTION

AGE	Group A Dead			Group B Living		
	TOTAL	THOSE WITH MULTIPLE INFARCTIONS		TOTAL	THOSE WITH MULTIPLE INFARCTIONS	
Under 40	2	1	50%	5	0	0%
41 to 49	11	5	47%	7	3	43%
50 to 59	28	10	36%	29	3	10%
60 to 69	38	7	19%	25	4	16%
70 to 79	18	8	44%	22	2	9%
80 plus	3	2	67%	12	3	25%
TOTAL	100		33%	100		15%

most eligible for myocardial infarction (age 50-59) who die as compared to those who recover (10%) in the same age group. Moreover, it is noted that there is an equally high incidence of multiple infarction (47% and 43%) in patients aged 41 to 49 in both Group A (dead) and in Group B (living). This age group deserves further analysis. One encouraging observation is that as many as 15 patients out of 100 with 5 of them past the age of 70 should survive multiple myocardial infarctions. The question might be asked is there some favorable prognostic factor in this last-mentioned group, not present in the younger age group?

**Congestive Phenomena and Prognosis** "Congestive phenomena" is here used to include all instances where in breathlessness was accompanied by a minimum of one or more of the following items. (1) Nocturnal dyspnea. (2) Stethoscopic and/or X-ray evidence of pulmonary congestion not of infectious origin. (3) Vital capacity of 60% or less in the absence of any other apparent reason except myocardial insufficiency. It is possible that in some cases, especially as applied to Group B (living), the evidence of congestive

phenomena was borderline or probably rather transitory. At least we are convinced by general observation that the cardiac decompensation in association with coronary heart disease, especially acute infarction, is a very unfavorable prognostic observation not clearly enough shown in table 4 which indicates only about 10% higher incidence of congestive phenomena in Group A (dead) than in Group B (living). On the other hand the development of congestive phenomena (not circulatory collapse) in association with acute myocardial infarction may in fact be a more or less transitory occurrence resulting from an acute onset of an equally transient disturbance of rate or rhythm. The prognostic aspects, however, are grave unless prompt and intelligent treatment of the auricular fibrillation or flutter or some other such inefficient heart action is promptly controlled, if controllable.

The incidence of congestive phenomena in patients of the age level (50-59) which is statistically most eligible for acute myocardial infarction is essentially the same in both Group A (dead) and Group B (living). The age level of 40 to 49 carries a higher incidence of congestive phenomena than an-

TABLE 4 INCIDENCE OF CONGESTIVE PHENOMENA

AGE	Group A Dead			Group B Living		
	TOTAL	THOSE WITH CONGESTION		TOTAL	THOSE WITH CONGESTION	
Under 40	2	0	0%	5	1	20%
40 to 49	11	6	55%	7	3	43%
50 to 59	28	6	21%	29	7	24%
60 to 69	38	15	40%	25	7	28%
70 to 79	18	10	56%	22	8	36%
80 plus	3	3	100%	12	5	42%
TOTAL	100		40%	100		31%

ticipated there being a 55% incidence in Group A (dead) and 43% in Group B (living). This requires an explanation. It is our observation that some robust men of the age level 40-49 tend to refuse to acknowledge symptoms of a milder coronary occlusion only to have a second attack or the occurrence of acute dyspnea bringing to light a bad prognostic situation. Our pathologist on several occasions has examined such hearts and has found an inadequately healed old infarction impairing competent heart action. Except for patients at the 40-49 age level it is noted that in general the longer a patient with coro-

nary heart disease lives the more likely are congestive phenomena to make their appearance.

#### Conduction, Rhythm and Rate Abnormality Lumped Together as a Prognostic Factor

This category, as inclusively compiled, includes any aberration of the heart action with the principal entities consisting of extrasystoles of auricular and ventricular origin, the heart blocks (complete, partial auricular-ventricular, left and right bundle-branch blocks, etc.), tachycardias of sinus and aberrant origin (auricular, nodal and ventricular), auricular fibrillation and flutter, etc. In some instances

TABLE 5 INCIDENCE OF CONDUCTION, RHYTHM AND RATE ABNORMALITIES

AGE	Group A Dead			Group B Living		
	TOTAL	THOSE WITH CONDUCTION AND/OR RHYTHM DEFECTS		TOTAL	THOSE WITH CONDUCTION AND/OR RHYTHM DEFECTS	
Under 40	2	0	0%	5	3	60%
41 to 49	11	5	47%	7	5	71%
50 to 59	28	10	36%	29	14	49%
60 to 69	38	19	50%	25	10	40%
70 to 79	18	12	67%	22	12	55%
80 plus	3	3	100%	12	8	67%
TOTAL	100		49%	100		52%

the abnormal heart action was transient, short-lived and required no specific therapy while in other cases prompt and judicious use of indicated digitalis or quinidine or equivalent was considered to be urgent and conceivably a life-saving measure.

Our general impression is that any or all of these manifestations occurring in connection with verified coronary heart disease, particularly acute infarction, are of unfavorable prognostic significance but to a varying degree. For example, the irregularity caused by extrasystoles of itself is generally considered relatively benign. However, extrasystoles in acute heart disease may suggest an imminent chain of events leading to the more malignant ventricular tachycardia followed by ventricular fibrillation and death or auricular fibrillation with rapid inefficient ventricular rate and acute congestive failure. In general, a persistent tachycardia, say above 95, irrespective of mechanism, unless amenable to specific cardiac medication such as digitalis or quinidine or equivalent, we consider an unfavorable prognostic sign. Obviously an all-inclusive list of the aberrations of heart action in connection with acute myocar-

dial infarction needs further analysis to be statistically significant in regards to the particular manifestations.

Nonetheless table 5 offers particularly interesting observations. There is a significantly higher incidence of conduction, rate and rhythm abnormalities in patients under 60 or Group B (living) than in Group A (dead). This is one of the statistical paradoxes which led us to investigate the so-called "unfavorable psyche," later referred to in some detail, and which in our opinion, accounts for this and other unorthodox observations as applied to the younger patients with acute infarction. On the other hand, the appreciably higher incidence of aberrations of heart action in Group A (dead) as compared to Group B (living) for patients aged 60 or older falls in line with what is expected of this prognostic factor.

**The "Unfavorable Psyche" as a Prognostic Factor** The term "unfavorable psyche" is used herein to mean either an abnormally anxious or apprehensive state of mind, not necessarily related to the true status of the patient's coronary disease and/or a conscious or subconscious refusal to accept the realistic considerations of the

TABLE 6 INCIDENCE OF UNFAVORABLE PSYCHE TOWARD HEART DISEASE

AGE	Group A Dead			Group B Living		
	TOTAL	THOSE WITH UNFAVORABLE PSYCHE		TOTAL	THOSE WITH UNFAVORABLE PSYCHE	
Under 40	2	2	100%	5	0	0%
41 to 49	11	11	100%	7	4	57%
50 to 59	28	24	80%	29	7	24%
60 to 69	38	19	50%	25	6	24%
70 to 79	18	5	28%	22	4	19%
80 plus	3	0	0%	12	0	0%
TOTAL	100		61%	100		21%

coronary illness. As a practical consequence in connection with either or both of these aspects of the unfavorable psyche, the patients tend not to cooperate fully in the intelligent management either before, during or after the occurrence of an acute myocardial infarction. To list another occasional manifestation: When cooperating, the patient may in fact appear to enjoy poor health and actually will complain when he commences to feel better.

An "unfavorable psyche" as applied to coronary heart disease generally has its origin from one or a combination of 3 sources: (1) From the hereditary or familial pattern. (2) From the environment, especially domestic and economic influences. (3) Occasionally from the medical and nursing professions. The physician who gives thought not only to the scientific management of the particular diagnosis but also to the total patient as an individual personality has no difficulty in classifying coronary heart disease patients as to favorable or unfavorable psyche in relationship to prognosis.

Table 6 shows the statistics of our two groups of patients, the living (B) and the dead (A) with the classification of patients made in regards to an unfavorable psyche. The specific figures support the generalization that an unfavorable psyche is an exceedingly important factor with a three times higher incidence in series A (dead) than in series B (living). Of greater interest, however, is a breakdown of where the unfavorable psyche is most apparent,

namely, in the younger patients with coronary heart disease, those who are at the peak of their careers and family life. It is our contention that the attending physician has a profound obligation to approach such a catastrophic illness as acute myocardial infarction understandingly and realistically in essentially the following suggested manner: "Yes, this is a serious and important illness much like many other acute illnesses; that the first period of treatment (2 to 4 weeks or longer) is very significant; that relatively complete recovery is to be anticipated and that a return to a reasonably normal and happy, though modified life is to be expected." This approach is in line with the pathological and clinical facts of the disease. Statistics more and more emphasize that this more optimistic approach is a valid one.

Another observation is an encouraging one. Note that in Group A (dead) and in Group B (living) there is a total of 15 patients past the age of 80 who have had one or more verified myocardial infarctions and that none of them, in our judgment, possessed an unfavorable psyche. Of the 15, 12 are not only still living but possess a most favorable psyche in relationship to coronary heart disease and life in general. Is there any better proof that coronary heart disease is compatible with longevity than to note these exemplar patients reaching the age of 80 or better? We contend that more attention needs to be paid to improvement of the psyche in younger patients with coronary heart disease.

### Summary and Conclusions

In conclusion, by a careful survey of such prognostic factors as

established hypertension, previously existing angina pectoris, the mul-



tiplicity of the infarction, the occurrence of congestive phenomena and the abnormalities of conduction, rhythm and rate of the heart it is possible to have an understanding in a general way of the outlook for a patient with acute myocardial infarction. There is another prognostic factor termed "unfavorable psyche" which is insufficiently emphasized. This involves unwarranted patient apprehension or a refusal to accept a realistic viewpoint and is especially significant in connection with patients under the age of 60. These generalizations are discussed in light of observation and statistical data compiled from an analysis of two series of patients. Group A of 100 patients dead of coronary heart disease and Group B of 100 who have survived one or more verified myocardial infarctions.

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## References

1. Boas, Ernest: The Natural History of Coronary Artery Disease of Long Duration, *American Heart Journal*, 41: March, 1951.
2. Russek, Henry L., Zoltman, Burton L., Joerer, Alexander A., Russek, Allen S., and White, LaVere G.: Age and Survival in Cases of Acute Myocardial Infarction, *J.A.M.A.*, 147: 1731-1733, Dec. 29, 1951.
3. Master, Arthur M., and Jaffe, Henry L.: Complete Functional Recovery After Coronary Occlusion and Insufficiency, *J.A.M.A.*, 147: 1721-1726, Dec. 29, 1951.
4. Block, William J., Crempacker, Edgar L., Dry, Thomas J., and Gage, Robert P.: Prognosis in Angina Pectoris, *J.A.M.A.*, 150: 259-264, Sept. 27, 1952.
5. White, Paul D.: Principles and Practice of Prognosis with Particular Reference to Heart Disease, *J.A.M.A.*, 153: 75-79, Sept. 12, 1953.
6. Russell, Nelson G.: Coronary Disease in Centenarians, *Am. J. M. Sc.*, 225: 241-244, 1953.
7. Kirkland, Henry B., Kiessling, Charles E., and Lyle, Annie Marie: The Evaluation of Certain Fundamental Electrocardiographic Patterns in the Selection of Insurance Risks, *Bulletin of the Prudential Insurance Co. of America*, Newark, N. J. (Read at the 60th Annual meeting of the Association of Life Insurance Directors of America, October 11-12, 1951.)
8. Weiss, Edward, and English, O. Spurgeon: *Psychosomatic Medicine*, W. B. Saunders Co., 1943, pp 229-343.
9. Bean, W. B.: Infarction of Heart, Clinical Course and Morphological Findings, *Ann. Int. Med.*, 12: 711, 1938.
10. Wang, C. H., Bland, E. F., and White, P. D.: A Note on Coronary Occlusion and Myocardial Infarction Found Post Mortem at the Massachusetts General Hospital during the 20 year period from 1926 to 1945 inclusive, *Ann. Int. Med.*, 29: 601, 1948.
11. White, P. D.: Psyche and Soma: Spiritual and Physical Attributes of the Heart (Lovenheart Lecture), *Ann. Int. Med.*, 35: 1291-1305, December 1951.

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# Newer Concepts of Steroid Therapy for Allergic Disease

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Although the cortico-steroids and ACTH rank with adrenalin as our most effective temporary stop-gaps in the treatment of allergic diseases and their emergencies, recent literature<sup>20, 29</sup> reveals an amazingly high incidence of undesirable side effects, even death, from the administration of these substances. Recognition of this fact, a better understanding of the mechanisms involved, and a more cautious reevaluation of the suitability of use of these substances will enable us to lessen these complications and utilize steroids more effectively.

In the body, cortico-steroids are produced in the adrenal cortex to cope with stress. Therefore, it is in terms of the stress reaction that we attempt to explain the beneficial effect of their administration. The stress reaction,<sup>30, 31</sup> <sup>32, 33</sup> a neurogenic as well as endocrine reaction, is a function of the hypothalamic-anterior pituitary-adrenal axis. It may be divided into the shock and counter-shock phases.

The shock phase of the alarm stage is a vascular rather than endocrine phenomenon because it occurs regard-

less of the presence of the pituitary or adrenals, though it is associated with an increase of epinephrine in the venous blood. This hormone is secreted to counteract the vasodilation so characteristic of shock. Thus, patients with adrenal insufficiency may die from such trivial causes as anesthesia or minor surgery.

The counter-shock phase begins with the epinephrine in the venous blood stimulating the hypothalamus, which, by means of a neuro-trophic hormone, stimulates the anterior pituitary to secrete ACTH (Adreno-Cortico-Trophic-Hormone) which in turn stimulates the adrenal cortex. In certain cases of stress directly on the central nervous system, the anterior pituitary may be stimulated directly, thereby bypassing the hypothalamic segment of the cycle. In the adrenal cortex, ACTH causes the secretion of cortico-steroids, a loss of cortical lipids, and a loss of cortical

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ascorbic acid. This loss of cortical ascorbic acid, incidentally, may be an etiological factor in Collagen diseases.

The adrenal cortex is composed of three layers; the Zona glomerulosa, the Zona fasciculata, and the Zona reticularis. Desoxycortico steroid (aldosterone) is produced in the Zona glomerulosa; 11-oxycortico steroid and 17-hydroxycortico steroid (cortisone and hydrocortisone) in the Zona fasciculata; and the sexogens such as androgen, estrogen, and progesterone in the Zona reticularis.

Aldosterone, the desoxycortico steroid or mineral corticoid from the Zona glomerulosa depresses the excretion of sodium and chloride from the kidneys and increases the excretion of potassium, causing a rise in serum sodium and chloride with resultant edema, an increase in plasma volume, hypertension, and a fall in serum potassium. The depressing-effect of the serum potassium is most marked on the first day of continued stress or therapy with steroids and may disappear by the third or fourth day because of the increased production of ammonia, by the kidneys, which lessens the excretion of potassium. The secretion of this hormone is probably not controlled by ACTH. It appears, then, that the counter-shock phase of the alarm stage is accomplished by cortisone and hydrocortisone, the steroids produced in the Zona fasciculata.

Cortisone and Hydrocortisone, (11-oxycortico steroids and 17-hydroxycortico steroids respectively), affect the metabolism of the nucleoproteins, protein, sugar, fat, and the mucopolysaccharides; and also, the circulating eosinophiles. In the nucleoprotein metabolism, the lymphocytes and plas-

ma cells, which are the cellular sources of antibodies, are dissolved, thus depressing antibody formation. Following stress, the epithelial cells of the Pancreas and the Parotid rapidly stop secreting and some may even undergo necrosis. This depressing effect upon nucleoproteins causes an interference in growth which, however, nature fortunately neutralizes in most cases with an increased secretion of the growth hormone. The synthesis of protein is depressed with a simultaneous increase in its catabolism sometimes resulting in a negative nitrogen balance. Clinically, one may see a waste of muscles, bones (osteoporosis), and other tissues. In the fat metabolism, there is a mobilization of fatty acids which may be followed by obesity. The effect of the hormone on sugar metabolism is one of increased glycogenesis with glycogen storage in the liver, kidneys, and heart; and a decreased utilization of sugar, resulting in hyperglycemia and aggravation of Diabetes mellitus. In the mucopolysaccharide metabolism, the proliferation of the fibroblasts and the formation of ground substances and collagen fibres is suppressed, which explains the beneficial effect of these hormones on Collagen Diseases. It also explains why steroid therapy is contraindicated in patients with peptic ulcer or advanced ulcerative colitis. According to Seifter,<sup>38</sup> these hormones, by limiting the source of protecting mucopolysaccharides, enhance the accumulation of crystals in the kidneys of those predisposed to form urinary calculi. Urinary stones were very common among our troops in the Pacific and among our aviators in training because the severe stress caused production of excessive corticosteroid hormone raising the urinary

cortico-steroid level and consequently depleting the urine of mucopolysaccharides which resulted in crystallization of urinary components. Although the specific mechanism is unknown, we know that the cortico-steroids, in addition to their other effects, reduce the number of circulating eosinophiles. This effect is the basis of the Thorn Test for adreno-cortico function.

In large amounts, these glucocorticoids also augment the urinary excretion of potassium and tubular reabsorption of sodium.<sup>42</sup>

The adrenal sexogens, in excessive amounts, cause precocious development in boys and pseudohermaphroditism in women. They also serve as protein anabolizers which counteract the protein catabolizing effects of the glucocorticoids.

The stage of resistance occurs during periods of continued stress as observed, for instance, in starvation and drug addiction. The functional changes occurring during this stage are similar to those seen in the counter-shock phase of the alarm stage. The Zona fasciculata becomes hyperplastic and secretes more of the glucocorticoids.

The stage of exhaustion, occurring after chronic diseases and severe operations, is actually a state of exhaustion of the adrenal cortex. Morphologically, one observes a depletion of the cortical lipids and cortical ascorbic acid in the adrenal cortex. These patients die frequently in adrenal crises following over-exertion, surgical procedures, acute infectious diseases or other stressing events. Obviously they can no longer counter-shock adequately. The clinical picture of this hypocortinism shows low fasting blood sugar with a tendency to hypoglycemic episodes, increased sensi-

tivity to insulin, disappearance of Diabetes mellitus if present, increase in protein synthesis, increase in antibody formation, impairment of antibody-antigen reactions, depression of urinary excretion of glucocorticoids and 17-keto steroids, and elevation of the blood cholesterol level.

Hypercortinism can occur naturally or be brought on artificially. It may take the acute form which would be observed during the stress reaction or during excessive counter shock or it may take the chronic form which would be observed during excessive administration of ACTH or the cortico-steroids chronic stress, or as a result of tumors of the anterior pituitary or adrenal cortex. In the acute form, the clinical manifestations may be pancreatic and parotid necroses, urinary gravel formation, and possible hemorrhage and perforation of gastric or intestinal ulcers resulting from the steroids suppressive reaction on the connective tissue.

In the chronic form, we might find hyperglycemia, glycosuria, osteoporosis, obesity, disturbance of electrolyte metabolism with edema, acne, impotence, hirsutism and amenorrhea. Large amounts of glucocorticoids also augment the urinary excretion of potassium and the tubular reabsorption of sodium which increases water retention.

It becomes apparent, then, that the steroids are part of our normal physiological responses and they constitute a necessary link in normal physiological reactions. However, when these normal responses become exaggerated, the result may be pathological syndromes.

The hypo or hyper-functioning of the adrenal cortex may be determined by a quantitative analysis of the twenty-four hour urinary excretion of the gluco-

corticoids and the 17-keto steroids.<sup>24, 25</sup> According to the Holtorf-Koch method of assay, the 17-keto steroids normal values for adult men between ages of twenty and forty years range from twenty to forty milligrams per day and for females of the same age group, the range is between eight and fifteen milligrams per day. In both the male and female child, one finds less than one milligram per day at birth and values of about one to two milligrams until the age of eight years when a gradual rise to adult levels begins. In the old age group, there is a gradual decline in 17-keto steroid levels in both males and females, but more so in the former. The normal values for glucocorticoids are one to two milligrams per day. Only about five percent of the total amount of adrenal cortex tissue normally present is necessary to produce enough cortico steroids to sustain life under ordinary circumstances. This basal output is the equivalent of steroid dosage, required by totally adrenalectomized persons in good health, which is thirty milligrams of oral cortisone acetate daily supplemented by one milligram of bucal desoxycorticosterone acetate with adequate salt intake.<sup>41</sup> This amount does not allow for additional stress.

Low values usually indicate a hypo-functioning adrenal cortex as is seen in Addison's Disease, hypopituitarism, hypothyroidism, hyperthyroidism, and other chronic diseases.

A convenient and accurate method of gauging adreno-cortical function<sup>42</sup> is as follows. Twenty-four hour urinary 17-keto steroid and glucocorticoid levels are measured for two days preceeding the test. Then forty units of repository ACTH is given intramuscularly every

twelve hours for three days. The 17-keto steroid and glucocorticoid determinations are repeated during and for two days after the ACTH injections.

If the control levels exceeded two milligrams per twenty-four hours an increment of one hundred per cent or more is considered an adequate response to the ACTH. If control levels are below two milligrams, only increments of over two hundred per cent are significant.

High values of twenty-four hour urinary excretion of glucocorticoids and 17-keto steroids signify a hyperfunctioning adrenal cortex. These are usually much higher with adrenal carcinoma (about two hundred milligrams per day or more) than with hyperplasia.

Another means of determining the functional capacity of the adrenal cortex is by means of the Thorn Test.<sup>44</sup> Twenty-five milligrams of ACTH should produce a reduction of at least fifty per cent in the circulating eosinophiles within four hours if sufficient functioning cortical tissue is present.

The synthetic analogues of cortisone and hydrocortisone are Prednisone and Prednisolone. These newer products are equally effective and are approximately four to five times as potent as the original hormones. The major advantage of these synthetic products is that the electrolyte disturbance is less severe and the water retention is correspondingly diminished. In the early stages of investigation are newer steroid analogues claimed to be devoid of sodium retaining qualities and have more glucocorticoid activity than Prednisone and Prednisolone. More exact data on these developments will probably appear within the next year. One of the disadvantages of the syn-

thetics Prednisone and Prednisolone is that the incidence of gastro-intestinal flare-ups, according to Boland,<sup>22</sup> is about thirty per cent higher than with the natural hormones. It is believed that they provoke about fifty per cent more hydrochloric acid secretion which undoubtedly causes much of the epigastric distress. Peptic ulcers may also be central in origin as substantiated by the fact that Dr. Cushing was able, some twenty-five years ago, to produce peptic ulcers by electrically irritating the hypothalamic area. Perforation of peptic ulcers may occur because the steroids suppress the proliferation of fibroblasts and the formation of ground substances and collagen fibres. Beck *et al.*<sup>29</sup> and Cecil *et al.*<sup>30</sup> published the most complete tables to date on the side effects observed during prolonged, excessive Prednisone and Prednisolone therapy. Other researchers have reported on the incidence of one or more

of these complications. In the following table, the observations of Beck *et al.*, Cecil *et al.*, and a composite of the others plus my own experience are cited.

Many of these complications can be either avoided completely or at least minimized if the proper precautionary measures are taken.

Steroid therapy should be avoided completely in the presence of arrested or active tuberculosis, viral infections such as Vaccinia and Varicella, psychoses, severe Diabetes, peptic ulcer, or renal calculi disposition. In the case of tuberculosis, if an emergency arises, concomittant anti-tuberculosis therapy may be used.

One should also bear in mind that steroids merely suppress the clinical manifestations of allergic disease and afford symptomatic relief, but they do not alter the hypersensitive state. According to Schick,<sup>28</sup> they partially interfere with the antigen-antibody union.

#### Side Effects

	Beck et al. (136) (patients)	Cecil et al. (138) (patients)	Composite (Ca. 3000) (patients)
Hirsutism			13.0%
Acne	16.2%		16.0
Abnormal fat deposition		30.0	16.0
Euphoria		27.0	30.0
Disturbed mental state	5.9		6.0
Insomnia			20.0
Epigastric distress	18.4	22.0	19.0
Reactive peptic ulcer	2.2	6.6	7.0
Perforation of peptic ulcer			0.05
Osteoporosis and fracture	2.2	3.6	3.0
Thromboembolism	2.2		2.2
Purpura		17.0	17.0
Activation of infection, including tuberculosis	5.9		5.0
Paresthesias and muscular cramps	2.9		2.9
Aggravation of Diabetes			30.0
Glycosuria	2.9	4.0	3.0
Increased perspiration		4.0	2.0
Hypertension		3.0	3.0
Nausea		4.0	2.0
Fluid retention and weight gain		12.3	3.0
Weight gain for other reasons			7.0
Urinary calculi			3.0
Disturbance in growth			8.0
Increased appetite			20.0

They have, however, no effect on the reagin titre nor blocking antibodies.<sup>22, 26, 27</sup> Thus the ability of the steroids to inhibit antigen-antibody reaction is a double edged sword. The desirability of alleviating, even temporarily, allergic states is offset by the dangers incurred in inhibiting the beneficial and necessary antigen-antibody reactions in the fight against infecting germs. The anti-inflammatory action of the steroids is another danger with which to be reckoned. It might mask an infectious process until it is well disseminated. Whereas an appropriate antibiotic will control bacterial invasion, there are no satisfactory virucidal agents to combat the viral dissemination. Thus the literature<sup>25, 27</sup> reports fatalities occurring during steroid therapy from Vaccinia and Varicella. Furthermore, never introduce live viruses by vaccination during steroid therapy. The administration of cortisone to hamsters and monkeys to infection with the virus of poliomyelitis changed non-paralytic to paralytic polio. Another danger to be considered when administering steroids, is that they inhibit the natural production of ACTH. Because of the absence of the stimulating hormone, a functional atrophy of the adrenal cortex may result. Varying degrees of this may occur within as short a period as five days.<sup>30, 40</sup> If steroids were completely withdrawn from a patient, who had been under steroid therapy for as little as five days, one might observe in that patient; weakness, poor appetite, aggravation of previous symptoms, fever, tachycardia, and even cardio-vascular collapse. This hypocortinism resembles the mild crisis in Addison's Disease, just as hypercortinism simulates Cushing's Syndrome.<sup>23</sup> Even if this does not oc-

cur immediately, these patients run the risk of succumbing to adrenal exhaustion in the event of future stress. Our tests for adreno-cortical function are accurate in so far as adrenal unresponsiveness is concerned, but they are not a true index of the capacity to withstand additional stress. Therefore, such patients may require prophylactic steroid therapy for at least the next year and one half to carry them over any situation involving additional stress.<sup>42</sup> By tapering off on the cortico steroids as soon as possible and administering ACTH once weekly in gradually diminishing doses during the course of therapy, disuse atrophy of the adrenal cortex might be avoided.

Other side effects may also be avoided by the practice of careful prophylactic measures during steroid therapy. The danger of masking bacterial infection, with steroids may be avoided by the early administration of adequate antibiotics. Five hundred milligrams daily of ascorbic acid may be able to replace the Vitamin C depleted from the adrenal cortex during counter-shock, therapy lessening the incidence of Collagen Diseases and Purpura. Antacids prescribed after meals will reduce the incidence of epigastric distress and peptic ulcer activation or perforation. One should be exceptionally watchful for the possibility of perforations of peptic ulcers because they can occur so insidiously. A high protein diet may prevent osteoporosis. An additional measure against protein loss and osteoporosis is the administration of Testosterone two hundred to three hundred milligrams intramuscularly every three to four weeks. However, once this condition exists, orthopedic measures such as supports may be required to safeguard



against fractures of the vertebrae, hips, ribs, and long bones. Six to nine milligrams of potassium chloride per day orally will replenish the body store of potassium, improve the hypokalemic acidosis, and reduce sodium retention.<sup>42</sup> At all times, close observation of the patient is essential for early detection of signs of toxicity and other side effects. This possibility and the status of the adrenal cortex may be checked regularly by means of the Thorn Eosinophile Test and the twenty-four hour urinary excretion analysis of 17-keto steroids and glucocorticoids. Require all patients under steroid therapy, to carry a card stating their type of medication and dosage. This information, in case of a surgical or medical emergency, might mean the difference between a fatal and non-fatal outcome.

The physiology of the anterior pituitary-adrenal axis and our empirical past experience make evident the value

of epinephrine, ACTH and corticosteroids as temporary stop-gaps in the treatment of allergic diseases and emergencies. But what also is obvious, is that these normal physiological reactions may result in pathological syndromes which manifest themselves in the many dangerous, sometimes fatal, side effects, that have been previously discussed. We therefore must realize that we are playing with fire. Steroids have their value, but they should be used only as a life-saving measure or to suppress clinical symptoms only until such time as accurate etiologic, diagnostic, and curative procedures such as hypo-sensitization and elimination of allergens can be instituted. An awareness of the incidence of the various undesirable side effects connected with steroid therapy coupled with our suggestion for combatting them will enable us to use these hormones more advantageously.

## Bibliography

1. Barach, Bickerman & Beck, *Disease Chest*, 27:515, 1955.
2. Jenkins, *Annals Allergy*, 13:700, 1955.
3. Fishbein, *Post Graduate Medicine*, 19:97, 1956.
4. Sheldon McLean & Mathews, *O Michigan Medical Soc*, 54:1081, 1955.
5. Sulzberger, N. Y., *State Journal*, 1827, 1956.
6. Canizales, Shatin & Rosenbaum, N. Y., *State Jour*, 3583, Dec, 1955.
7. Feinberg & Feinberg, J. A. M. A., 264, 1956.
8. Schwartz, N. Y., *State Journal*, 570, 1956.
9. Schwartz, N. Y., *State Journal*, 75, 1956.
10. Crip, J., *Allergy*, 27:220, 1956.
11. Symposium on Meticorten for Asthma, *Jour. Allergy*, 26:189, 1955.
12. Prickman, J. A. M. A., 937, 1956.
13. Scientific Assembly of A. M. A., 105th Annual Meeting, Chicago, June 1956.
14. Costello, N. Y., *State Jour*, 51:2017, 1951.
15. Russo, N. Y., *State Jour*, 52:2117, 1952.
16. Medical Research Council Panel, *Brit. Med. Jour*, 2:1307, 1954.
17. Kierland, O'Leary, Prunty & Didact, J. A. M. A., 148:23, 1952.
18. Cannon, Hopkins, Andrews, Colfer, Gross, Nelson & Howell, J. A. M. A., 145:201, 1951.
19. Sulzberger, *Brit. Med. Soc*, 145, 1953.
20. King & Livingood, *Texas State Jour. Med*, 49:682, 1953.
21. Sulzberger & Witten, J. A. M. A., 155:954, 1954.
22. Boland, J. A. M. A., 160:613, 1955.
23. Bollet, Black & Bunim, J. A. M. A., 158:459, 1955.
24. Neustadt, McClendon, Olash & Best, *Jour. Kentucky M. A.*, 54:131, 1956.
25. Olansky, Smith & Hansen-Pruss, J. A. M. A., 927, Oct, 1956.
26. Thygeson, A. M. J., *Ophthalmology*, 36, 1953.
27. Kozinn, Sigell & Gorrie, *Pediatrics*, 16, 1955.
28. Schick, J., *Annals Allergy*, 14:343, 1956.
29. Beck, Bickerman, Marmovick & Barach, Scientific Assembly A. M. A., 105th Meeting, Chicago, June 1956.
30. Bernstein, Cecil, Kammerer & Freyberg, *ibid.* June 1956.
31. Selye, J., *Clin. Endocrinology*, 6:117, 1946.



32. Selye, H. Acta Inc., Montreal, 1950.
33. Selye, Horava & Heuser, *ibid.* 1951, 1952, 1953, 1954.
34. Thorn, Senzo, Prunty, Sarnett & Forsham, *Science*, 105:258, 1947.
35. Jailer, *Med. Clin. North America*, 757, May 1952.
36. Cooke, *Med. Clin. North America*, 811, May 1952.
37. Soffer, *Med. Clin. North America*, 791, May 1952.
38. Switter, J., *Federation Proc.* 9:314, 1951.
39. Salassa, Bennett, Keating & Sprague, *J. A. M. A.*, 152:1509, 1953.
40. Henneman, Wang, Irwin & Burrage, *J. A. M. A.*, 158:384, 1955.
41. Hills, Zintel & Parsons, *Am. J. Med.*, 21:358, 1956.
42. Thorn, Goldfein & Nelson, *Med. Clin. North America*, 40:1261, 1956.
43. Engbring, Truit & Engstrom, *Archives Internal Med.* 98:257, 1956.

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**S**HARE a light moment or two with  
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of humorous or unusual happenings in  
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# Rectal Bleeding

SIDNEY M. COPLAND, M.D., F.A.C.S.\*

Dayton, Ohio

Rectal bleeding is a symptom that demands a thorough investigation by the physician, regardless of whether or not an apparent cause is exposed in the first examination. More patients with this complaint are presenting themselves for examination than at any time in the past and this fact is a tribute to the American Cancer Society and its affiliated agencies. Any physician who does not completely study such a patient is derelict in his obligation to that individual and such an error may be a death warrant for the patient. Rectal bleeding is one of the two most common presenting rectal complaints, the other being pain.

**Colon** The colon is 150 cm. (5 feet) long and forms about one-fifth of the intestinal canal. It varies in width at different parts from 3-8 cm. It is about 10 cm. longer in the male than in the female. The cecum, ascending colon, the transverse colon and a small part of the descending colon are supplied by the superior mesenteric artery; the remainder is supplied by the inferior mesenteric artery. The blood supply of the rectum is from the superior hemorrhoidal by way of the inferior mesenteric, from the middle hemor-

roidal artery by way of the hypogastric, and from the inferior hemorrhoidal by way of the internal pudic artery. The vessels at the lower end of the rectum assume a longitudinal direction, communicating freely near the anus. The blood of the large intestines is returned into the portal vein by way of the superior and inferior mesenteric veins. The longitudinal arrangement of the veins near the anus is known as the hemorrhoidal plexus. Thus, the colon may be described as a five foot tube with a sero-muscular, vascular covering. It is interesting to note that the mucosa of the rectum is thicker than that in any other portion of the large intestine.

**History** An adequate history is as important in a case of rectal bleeding as in any instance that I am aware of, requiring a diagnosis. The age of the patient is important. Table #1 illustrates this fact. A Meckel's diverticulum or intussusception are the commonest serious causes of rectal bleeding in the first two years of life. From the age of two years to twenty years, one notes that the

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polyp is the commonest cause. Carcinoma of the rectum and sigmoid is virtually non-existent in the first ten years of life and almost as rare up to the age of twenty years. Hemorrhoids are not frequent in the first decade of life. Two of the most common causes of serious bleeding in the adult are not factors in infancy and early childhood. Again, allergic rectal bleeding does not exist in the adult. The epidemic summer diarrheas is a disease affecting infants but not adults. However, a condition common to all age groups that is responsible for rectal bleeding is constipation, and this should not be forgotten. However, this type of bleeding is small in amount and usually soils the tissue paper but does not discolor the water in the bowl.

The present illness portion of the history should be most specific in its questions. How much bleeding occurred? Was it just sufficient to soil the tissue? If so, and it was not noted on or in the stool, then one can conclude that the probable origin of the blood was the anal orifice or anal canal. Did the bleeding discolor the water in the bowl? If so, it need not have of necessity been a massive amount for a small amount of blood in water acts as a diffuse coloring agent. What is the color of the blood? It should be one of three varieties or a combination of these. Was it (a) black and similar to tar, (b) dark red blood or (c) bright red blood? This is a most important group of questions for it will frequently aid in the localization of the level of the intestinal tract at which the bleeding originated. The gastric and small bowel contents reach the cecum in 4-5 hours after ingestion but takes another 14-15 hours before being excreted. This period of time ex-

plains why bleeding from gastric and small bowel areas is black and tarry. Dark red blood usually originates from the splenic flexure to the sigmoid, but may originate in the transverse colon. The fecal stream, traveling from the splenic flexure to the rectum varies in its time table. It may take as long as 9 hours. However, a single act of defecation can empty the left colon to virtually the splenic flexure. Thus the blood may be mixed—bright red and dark red in color. Fresh red bleeding usually occurs from a source in the lower sigmoid, rectum or anal canal.

Is the rectal bleeding accompanied by pain at the time of defecation? If so, and if the blood is bright red, then anal pathology such as fissure in ano or inflammatory hemorrhoids should be suspected. Has the bleeding been associated with abdominal cramps or with alternating bouts of diarrhea and constipation? A fourth year medical student knows the logical suspect in this instance—carcinoma of the colon—but unless the patient is asked, he will not volunteer the information. Is the blood mixed with pus and mucus? If so, one must suspect an inflammatory or ulcerative process such as non-specific ulcerative colitis or a specific enterocolitis. Is the blood only on the surface of the stool or is it seen mixed into the substance of the stool? This is a detailed question that many patients will not be able to answer, but if one can do so then a valuable diagnostic clew has been found. The fecal stream in the right half of the colon is liquid and is in its formative state. If the blood is mixed into the substance of the stool, then it occurred while the stool was in its non-solid state, namely in the right half of the colon.

TABLE I

Name of Disease	Age	Bleeding in Children
MECKEL'S DIVERTICULUM	Before 2 years of age	<p>Characteristics and Remarks:</p> <p>These two are the commonest causes of bleeding in the first two years of life.</p>
INTUSSUSCEPTION	Is commonest cause of massive rectal bleeding	<p>The blood from a Meckel's Diverticulum is usually bright red. Recurrent colic pain and evidence of an acute abdomen are clues to diagnosis. Roentgen examination is great aid in diagnosis.</p> <p>Intussusception occurs in 87% of the acute idiopathic type in children under ten years of age. A triad of symptoms—paroxysmal abdominal pain followed by vomiting, a variable degree of shock and a bloody stool is noted. A mass may be felt by abdominal or rectal examination. Flat plate X-ray of value.</p>
POLYP	Commonest cause of gross rectal bleeding from age 2 to puberty	<p>This is the solitary or multiple polyp but is not to be confused with polyposis of the colon. Bleeding usually occurs during or shortly after a bowel movement. The amount of bleeding varies.</p>
POLYPOSIS OF COLON	Virtually absent before 10 yrs. of age	<p>Sigmoidoscopic and roentgenologic examinations are pathognomonic. History important, usually in retrospect.</p>
CONSTIPATION AND ANO-PROCTITIS	Common at all ages	<p>In infancy the constipation is due to lack of dietary supervision. Multiple, small, incomplete mucosal fissures may be present and cause bleeding that usually soils tissue paper only. The rectum may likewise present a dry mucosa with stellate fractures of the mucosa resulting in minimal bleeding.</p>
ULCERATIVE COLITIS	Not infrequent in teen agers	<p>Disease may be acute or chronic, bloody and mucopurulent diarrhea frequent at outset but bleeding alone may be the presenting complaint. Sigmoidoscopy of greatest aid in making early diagnosis.</p>
PROLAPSE OF RECTUM	Usually in Infancy. First 2-4 yrs. of life	<p>Usually mucosal in character. Diagnosis is evident.</p>
HEMORRHOIDS	Rare	<p>May occur.</p>
FISSURE IN ANO	Common	<p>Usually in constipated child or infant. Bleeding is in small amount—only sufficient to soil cleaning tissue.</p>
CARCINOMAS OF RECTUM AND SIGMOID	Rare in first 10 years of life	<p>Not much of a source for bleeding in the infant and child. *Phifer found only 15 cases under 20 years of age in 11,000 reported cases of carcinoma of rectum and sigmoid in the literature.</p>
ALLERGIC BLEEDING	Is in newborn, is rare	<p>Usually due to allergy to cow's milk. Is usually a disease of first month or two of life.</p>
ENTERO-COLITIS	Infancy	<p>The epidemic summer diarrheas run a fulminating course and cause rectal bleeding.</p>

\* Phifer, C. H.—Causes of Rectum and Sigmoid in Childhood and Adolescence. Ann Surg. 77:711, 1923.

**Past History** The past history is also of importance. Has the patient had X-ray therapy (deep) in the past? Thus one can predict the presence of a factitious (radiation) proctitis. Has the patient had endometriosis? They may not know this answer, but the record is available. Have previous bouts of rectal bleeding occurred? It is amazing how many years a patient may have rectal bleeding before seeking a medical opinion. Of course, it is most probably that such a patient has hemorrhoids, but it is not positively true and they must have a full examination even if massive Grade IV hemorrhoids are present.

**Malignancy** Malignancy of the colon is the most serious cause of rectal bleeding in the adult and it is common. According to available statistics 500,000 persons in the United States develop a malignancy each year. Lynch has reported that 35,000 deaths occur each year from malignancies of the colon. Now 77% of all malignancies of the colon occur in the rectum, recto-sigmoid and sigmoid portions. Thus one can conclude that 77% of 35,000 annual deaths from cancer of the colon are within reach of the sigmoidoscope or cause blood in the stools. I wonder how many of these 26,950 such patients could be alive in any given year if they heeded the rectal bleeding when it first occurred, or if a sigmoidoscopic examination had been done early. This is especially food for thought in light of Rankin and Graham's observation that more patients with carcinoma of the rectum and colon are found to survive over a given period of years than with carcinoma of any other portion of the gastro-intestinal tract.

The able listing the causes of rectal bleeding reveals nearly half a hundred

etiological possibilities. This fact further substantiates the need of a diagnostic work-up that is meticulous and thorough. Several of these factors are worthy of passing mention. The polyp is common in adult life and it is widely thought that adenomas of the colon if given sufficient time, will develop into carcinomas. Therefore, every polyp should be removed but must be diagnosed first. The commonest symptoms of a polyp is rectal bleeding and if this clue is followed up the polyp will be discovered and a potential carcinoma of the colon prevented. The figure originated by Jackman and Mays shows the comparative distribution of carcinomas and polyps in the large bowel.

**Diverticulitis** is a cause of rectal bleeding and in massive amounts at times. The literature reveals variations of 10-40% incidence of bleeding. More recently it has been demonstrated that diverticularis is a cause of massive rectal bleeding. This is an important fact for about 15% of the general population over 40 years of age have this disease. The bleeding can be of such huge proportions that a resection may be a life saving procedure.

**Hemorrhoids** Not much has been said about hemorrhoids as a source of rectal bleeding in the adult. Of course, this is the most common single cause. It should never be taken for granted that any case of rectal bleeding with demonstrable bleeding hemorrhoids is completely explained until a sigmoidoscopic examination followed by a barium enema study has been made. It is rare for a patient with carcinoma of the colon not to have hemorrhoids. There is no rule of nature that prohibits of multiple pathological entities existing. I have previously seen a red blood count

TABLE II

## CAUSES OF RECTAL BLEEDING

## I. CONGENITAL ANOMALIES

1. Meckel's Diverticulum
2. Polyps
3. Anorectal stricture
4. Congenital obstructions of gastrointestinal tract.

## II. LOCAL LESIONS OF ANO-RECTUM

1. Hemorrhoids
2. Malignancy
3. Polyp
4. Benign tumors of rectum and sigmoid
5. Fissure in ano
6. Fistula in ano
7. Intra-anal condylomata
8. Proctitis
9. Foreign bodies
10. Prolapse of rectum
11. Traumatic rupture of rectum
12. Fectitial (Radiation) proctitis
13. Rectal stricture

## III. COLON LESIONS

1. Inflammatory lesions
  - A. Enterocolitis
    - a. Food poisoning
    - b. Drug poisoning as mercury, lead, etc.
  - B. Regional colitis
  - C. Amebic dysentery
  - D. Bacillary dysentery
  - E. Fungal colitis
  - F. Parasitic colitis
  - G. Non-specific ulcerative colitis
  - H. Tuberculous colitis
2. Spastic colitis
3. Diverticulosis
4. Diverticulitis
5. Polyps
6. Intussusception
7. Volvulus
8. Intestinal anomalies
9. Familial polyposis

## IV. SMALL BOWEL LESIONS

1. Regional enteritis
2. Benign tumors of small bowel
3. Malignant tumors of small bowel

## V. SYSTEMIC DISEASE

1. Portal hypertension
2. Purpura
3. Metastatic malignancies
4. Endometriosis
5. Hemorrhagic disease of the newborn.
6. Intestinal allergy

of 1,000,000 cells as a result of bleeding hemorrhoids. Hemorrhoids, although a most common source of rectal bleeding in the adult, is also the cause of many missed diagnoses. If a patient complains of rectal bleeding and examination reveals bleeding hemorrhoids, the examiner is satisfied that the diagnosis is evident. This sense of false security is the cause of negligence. Every case of hemorrhoids, should be sigmoidoscoped before being operated upon. This is an inviolate rule. How can one tell if the bleeding is from hemorrhoids or from higher up in the sigmoid? Again, if there is the slightest doubt of the source of the bleeding, a barium enema study should be made before operation. We are too often guilty of attempting to conserve the patient's finances and are prone to omit the X-ray study. This omission may be costly to the patient and a source of embarrassment to the physician for a carcinoma of the colon may have been missed. There is no method to differentiate the bleeding in these conditions other than to examine the patient thoroughly.

X-ray studies of the colon are of great value in determining the source of rectal bleeding and the roentgenologist should be reluctant to state that the study by barium enema is negative without a double air contrast study and without a repeat study. Such a report can lull the physician and patient into a sense of false security. All X-ray studies for rectal bleeding should be preceded by a sigmoidoscopic examination for no barium enema study is accurate for the terminal 25 cm. of the large bowel. A simple barium enema will demonstrate a constricting or nearly obstructive growth but will fail to re-

veal any number of lesions that are capable of producing massive rectal hemorrhages. An air contrast type of enema is of the greatest value in demonstrating a polyp or small carcinoma. The addition of 0.5 to 1% tannic acid to the opaque enema mixture is of aid in demonstrating polyps. When the colon is completely filled with barium, the polyp is obscured and not seen. It is essential to carry out fluoroscopy during the feeling of the colon and to take numerous films during this procedure. Stereoscopic roentgenograms in the sagittal, lateral and oblique projections may reveal the lesion when other methods fail.

The diagnosis and progressive changes in chronic ulcerative colitis, tuberculosis of the colon and other inflammatory processes in the colon can be demonstrated by the barium enema.

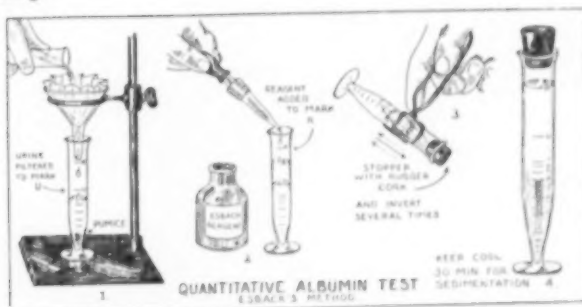
If the studies by barium enema are negative in the presence of rectal bleeding that has no other explanation, then the patient should have the situation ex-

plained to him and he should be told that one or more repeat X-ray studies may be necessary. I am sure if the patient knew that 17% of all malignancies occur in the colon, he would offer no objections. I have seen several studies made by the same diligent and excellent examiner on the same patient before the offending source of bleeding, a polyp, was revealed. If a single polyp or even two are found, the patient should have a repeat study before being operated upon. This is to rule out the possibility of a fecolith or gas bubble simulating a polyp and causing the patient to be operated upon needlessly.

Despite the most conscientious examination for rectal bleeding, including barium enema studies, there is a group of such cases that are not diagnosed. However, this is not a reflection on the examiner if all avenues of diagnosis have been explored. It is a challenge to keep the patient under observation and study.

750 Fidelity Building

## Clini-Clipping



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# Mechanical Heart-Lung Apparatus

**A new and promising adjunct to corrective cardiac surgery**

JOSEPH K. JOHNSON, M.D.  
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Surgical correction of defects and lesions within the heart has become fairly commonplace in most medical centers. "Blind" operations for the relief of mitral stenosis, pulmonic atresias and certain defects of the interatrial septum are of established value. These procedures employ small cardiectomy incisions through which the surgeon's finger or a slender instrument (valculetome, punch, etc.) are inserted briefly. Gross has devised a rubber "well" which permits direct suture of atrial septum defects at the bottom of a shallow pool of blood. These operations fall short of the ultimate goal of cardiovascular surgery which is the complete and accurate repair of all defects under direct vision. Techniques are now at hand which permit achievement of this goal. The development of these tech-

niques, their physiologic basis and their clinical application will be the subject of this discussion.

**Development of a Mechanical Heart-Lung Apparatus** Limited extra-corporeal shunting of the blood has been accomplished successfully for several years. An example of the use of this technique is the artificial kidney. It was Dr. John H. Gibbon, Jr.,<sup>1</sup> however, who foresaw the application of total cardiopulmonary by-pass by means of an extracorporeal heart-lung machine as an adjunct to intra-cardiac surgery. A persistent worker in this field since 1937 he and his co-workers have developed a very satisfactory mechanical heart-lung device which represents a remarkable piece of engineering. A modification (Kay-Gaertner) of this machine is now available commercially. Numerous pumps, combined with mechanical or biologic oxygenators, have since been devised and used clinically. Clarence Dennis, *et al.*,<sup>2</sup> reported, in

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1951, the first intracardiac corrective operation performed clinically using the apparatus for total cardiopulmonary bypass. Although the patient on whom the device was used did not survive it is significant that the operation was completed and life was maintained for 40 minutes using a machine of the Gibbon design. Hundreds of cases have now been operated on using a variety of machines. In some of the larger series of cases thus far reported mortality attributable to the technique itself has been low.

#### **Physiologic Basis for Extracorporeal Circulation and Oxygenation**

A vast amount of physiological research during the past ten or fifteen years has laid the foundation for the successful clinical application of extracorporeal oxygenation of the blood. With increasing use of these techniques numerous problems have arisen and solution of these problems is currently the subject of intensive research. Some workers have sought other means of performing open surgery in the heart. Swan<sup>3</sup> and others have successfully applied hypothermia. They have demonstrated the feasibility of repairing septal and valvular defects under direct vision where time required for the repair does not exceed seven or eight minutes. Unfortunately the time required for the surgeon to orient himself and complete the repair or reconstruction of major defects exceeds the period of protection of the nervous system offered by hypothermia. Lillihci<sup>4</sup> has successfully applied controlled cross-circulation using a human donor in 45 cases of open heart surgery. Studies on the oxygenation of blood laid the foundation for the development of a successful mechanical apparatus for cardio-pulmonary by-

pass. Briefly, four basic methods of oxygenation have been explored.

1. *Chemical Oxygenation*—the use of oxygen-releasing agents added to the blood in the extracorporeal circuit.

2. *Biologic Oxygenation*—the use of fresh cadaver lungs, heterologous (animal) lungs, and even one of the patient's lungs (or a lobe).

3. *Mechanical Oxygenation*—the direct exposure of blood to gaseous oxygen (or an O<sub>2</sub>-CO<sub>2</sub> mixture). There are two general types of mechanical oxygenators: the bubble type, in which oxygen is allowed to bubble through a column of blood; and the film type, in which blood is filmed over a large surface area exposed to oxygen—e.g., over glass or lucite spheres, over the surface of a rotating drum or over multiple stationary grids or screens.

4. *Oxygenation of Blood Across a Semipermeable Membrane*. Using membranes of various synthetic materials encouraging results have been obtained in the experimental use of this method. As yet, no practical clinical application has been made.

The chemical and biologic methods have been largely discarded because of inherent difficulties discovered in the course of their experimental use. Mechanical and membrane oxygenators have shown the greatest promise, though membrane oxygenation has not yet developed to the point where it can be applied clinically. Gas exchange—absorption of oxygen and liberation of carbon dioxide—occurs quite readily when blood is exposed to an atmosphere rich in one and poor in the other. Therefore almost all mechanical systems work well in providing adequate oxygenation and elimination of CO<sub>2</sub>. It must be remembered, however, that

formed elements of the blood are fragile structures and are damaged by any system in which they are kneaded or churned for an appreciable length of time. Hemolysis, increased fragility and decreased lifespan of platelets, red and white cells are known to occur with all types of mechanical oxygenation. In addition, prolonged perfusion of blood through the mechanical pump-oxygenator has been observed to alter the protein fractions of the plasma, especially fibrinogen. Observations to date suggest that these alterations are greatest with the bubble oxygenators and are least with the film and membrane oxygenators. One might postulate that the ideal unit will be compact, simple to operate, inexpensive and preferably disposable (to guard against the hazard of bacterial decomposition of fibrin retained in the system), produce minimal trauma to the blood, and be capable of handling a minute-volume at least equal to the basal cardiac output of the patient. No such oxygenator is yet available and much effort is currently being expended in developing a unit which will fill these requirements.

Control of coagulation is of fundamental importance in extracorporeal circulation of the blood. Heparin is the only satisfactory agent available for this purpose and its use is not without danger. All donor blood (for replacement and for priming the extracorporeal circuit) must be freshly collected and heparinized. At operation the patient is fully heparinized just prior to going on by-pass. As soon as the cardiotomy incision is closed and the by-pass discontinued protamine sulfate may be administered to neutralize excess heparin. The dose of protamine is determined by a titration method to pre-

vent so-called "heparin rebound." Some workers omit the protamine neutralization and have observed no abnormal bleeding tendency in their patients despite considerably prolonged *in vitro* coagulation time. Serious hemorrhagic complications have occasionally been reported as occurring several hours after perfusion and are probably attributable to depletion of fibrinogen and platelets. Hemorrhagic and shock-like complications may also result from toxic degradation products of protein retained in the system from previous use.

Changes in blood pH frequently observed with prolonged cardio-pulmonary by-pass are almost entirely due to accumulation of acid metabolites (i.e., lactic acid) and are not ordinarily a serious problem. Slight acidosis is readily corrected by increasing CO<sub>2</sub> content of the atmosphere in the oxygenator or by adding sodium bicarbonate solution to the perfused blood. It has been suggested that if cardiac by-pass of several hours duration becomes feasible the addition of a dialyzer (artificial kidney) to the circuit may be desirable.

Other untoward effects of extracorporeal circulation include embolization of the brain and coronary arteries by gas bubbles and fibrin particles. Bubble oxygenation, leaks in the circuit, technical errors, and inadequate heparinization are responsible for most of the occurrences. The use of non-wettable, siliconized surfaces, defoaming chambers and "bubble traps," anti-foaming chemical agents and filters have largely eliminated these hazards from machines in clinical use.

Maintenance of the systemic arterial pressure of the patient on cardiac by-pass was earlier thought to be possible only by maintaining a continuous re-

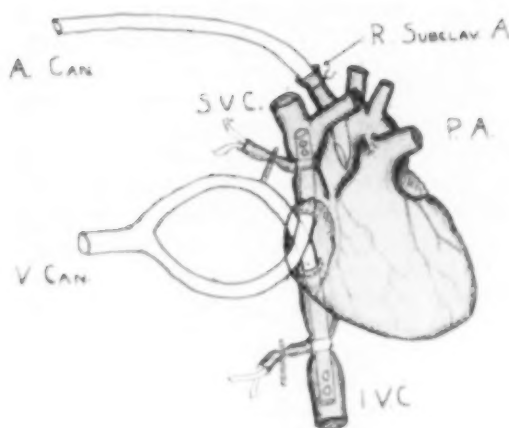


Fig. 1. Diagram to show placement of the arterial and venous cannulae in the great vessels. The venous cannulae (V. Can.) are inserted into the superior vena cava (S.V.C.) and the inferior vena cava (I.V.C.) via small incisions in the right auricular appendage. These cannulae do not significantly obstruct the blood flow to the heart until the occluding tapes are tightened. The arterial cannula (A. Can.) is securely tied into the aorta via either the right or left subclavian artery. The clear, Tygon tubing used for the cannulae and other conduits in the circuit is disposable.

turn of blood equal to the basal cardiac output. Physiologic studies have indicated this to be from 100 to 120 cc. per Kgm. (body weight) per minute. In a 70 Kgm. adult this represents a volume in excess of 7 liters per minute which must be returned to the patient's arterial system. In 1952 Andreason and Watson<sup>5</sup> discovered that occlusion of the inferior and superior venae cavae (leaving only the inflow from the azygos vein) results in a decrease in cardiac output to about 10 cc. per Kgm. per minute. Despite this tenfold reduction in cardiac output the anesthetized animal recovers without ill effects. This work encouraged Lillihei to employ controlled cross-circulation in which only a portion of the donor's circulation is used to perfuse the patient. Clinical application of this principle requires perfusion rates of 20 to 40 cc. per Kgm. per minute. These observations have resulted in a trend toward smaller, less complicated heart-lung machines. It is probably safe to say that such machines are now in the majority. These units, designed to operate at reduced flow

rates, use the Sigmamotor pump and various, simplified oxygenators (chiefly of the DeWall type). Such an apparatus is relatively inexpensive to assemble and operate, and in the hands of a few workers with wide clinical experience they have performed well. It would seem that, if properly applied, low-flow perfusion using simplified apparatus is safe for relatively short periods (less than 20 or 30 minutes). Other authorities state that greater rates of perfusion (60 to 80 percent of basal flow) best serve the interest of the small, critically ill patient. Much more clinical observation will be required to settle this point.

**Clinical Application** Both sides of the chest are entered using an "ox-bow" type submammary incision. The 3rd or 4th intercostal spaces are ordinarily used and the sternum is transected. After careful inspection of the mediastinal structures and identification of any anomalies of the great vessels the pericardial sac is opened. The venae cavae are cannulated via the right auricular appendage and tapes are ap-

plied about these vessels. Heparin is administered intravenously to the patient. The left or right subclavian artery is then cannulated and its distal end ligated. The clear plastic tubing of which the cannulae are made is securely fixed to the patient's chest wall by means of clamps or sutures to prevent accidental dislodgement from the vessels.

The venous cannulae, which have been temporarily clamped near the heart, are then connected together and a 3-way stopcock is inserted between the cannulae and the tubing from the machine. This arrangement permits syringe aspiration of all air and foam remaining in the tubing. Foam is readily seen through the clear plastic and the clamps are not released until all bubbles have been removed. The non-wettable surface of the tubing reduces friction and trauma to the blood and aids in elimination of gas bubbles.

In the meantime the machine has been running for some time, circulating first normal saline for removal of air from the system, and later circulating fresh, heparinized donor blood. Blood is collected from donors the morning of operation to minimize platelet loss. It may be possible, by using siliconized containers, to collect blood the day before if this is expedient. Donor blood is matched against other donor blood and against the patient's blood prior to pooling. Plasma hemoglobin level of the pooled blood is determined to be certain that no hemolytic reaction from improperly matched blood has occurred. Three to six pints are required to prime most systems. Blood is continuously recirculated through the system for several minutes prior to perfusion.

It is of the utmost importance that the patient's central arterial and venous pressures as well as the electrocardiographic pattern be continuously monitored. Strain gauges attached to cannulae in the femoral artery and vein and subcutaneously placed electrodes are connected to monitoring apparatus. This apparatus is preferably housed in an adjacent room where it is attended by a cardiologist or physiologist. The cardiologist communicates with the anesthesiologist by means of telephonic headsets. This eliminates much distracting activity and conversation in the operating room. The perfusion apparatus is manned by one individual who is intimately acquainted with every mechanical detail of the machine. He also wears a headset and makes adjustments of the machine according to instructions from the cardiologist or the anesthetist. The anesthetist communicates with the surgeon only when necessary.

Continuous oxygen analysis of blood in the extracorporeal circuit is conveniently carried out by means of a cuvette attached to the arterial side of the system. If the patient is on total by-pass for more than a few minutes frequent determination of the pH of the blood is advisable. For short periods of by-pass these determinations are occasionally omitted.

When all is in readiness the tapes are tightened on the cavae and the clamps released from the cannulae. Except for coronary blood being returned from the thebesian veins into the right atrium via the coronary sinus there is normally no blood in the right side of the heart. Blood may enter the left heart via the pulmonary veins from the bronchial circulation and there may be some regurgi-

tation of blood through the aortic valve when the heart is manipulated. In the presence of septal defects this blood passes from one side of the heart to the other and must be continuously aspirated if a clear field of operation is to be maintained. At times blood entering the chambers of the heart from these sources is excessive. This is especially true in a large, hypertrophied heart or in the cyanotic patient having a large collateral bronchial circulation. What

to do with this blood has been a perplexing problem. Obviously if the intracardiac return from these sources is large (500 cc. per minute is not unusual) it would be impractical to discard it and replace it with donor blood.

Several methods have been used to solve this problem. Kirklin<sup>6</sup> uses a special, sump-type aspirating tip which is attached to very gentle suction to draw blood from the region of the coronary sinus (in the case of right atriotomy)

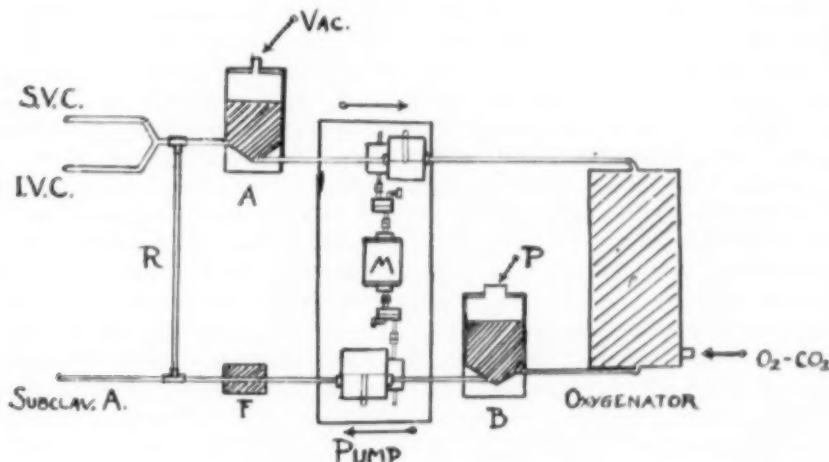


Fig. 2. Schematic diagram showing the essential features of the mechanical heart-lung apparatus. Venous blood from the cavae (S.V.C. & I.V.C.) enters the venous reservoir (A) with the aid of the slight negative pressure (Vac.) applied to the reservoir. The Sigmamotor pump consists of two finger pumps operated by a single motor. Speed of each pump is controlled independently, and the whole system can be operated manually by cranks in case of a power failure. Venous blood is pumped from the reservoir to the oxygenator, the type of which is not specified here. Arterialized blood then enters reservoir "B". Blood for priming and replacement is added to this reservoir at "P." When the cannulae to the great vessels are clamped prior to perfusion blood recirculates in the system through the cross-over (R). The filter (F) removes clots, bubbles, etc. from the arterialized blood. So long as the patient's arterial and venous pressures remain at satisfactory levels and the levels in the two reservoirs remain constant no

speed adjustments or additional blood are required. A decline in the patient's arterial pressure and in the blood level in "B" signifies blood loss or shock from any cause. Blood is then added at "P" and the arterial pump may be speeded up. In more complicated systems these functions are executed electronically. A suitable cuvette inserted anywhere in the system permits continuous gas analysis by an electronic device. The pH can likewise be determined electronically. Blood aspirated from the chambers of the heart may be filtered and introduced (by gravity or a separate pump) into the venous reservoir. Electronic flow meters placed in the venous (and intracardiac return) system and in the arterial system are incorporated in the more expensive systems. In addition to the finger pump (Sigmamotor) some systems use rotary (DeBaKey type) pumps with separated motors or various modifications of the Dale-Schuster pump which operates by compressed air.

into a special reservoir. After defoaming and filtering this blood is introduced into the oxygenator and recirculated to the patient. Lillihei has introduced a technique of brief, intermittent occlusion of the sinuses of Valsalva (by use of an aortic tourniquet). This provides three-minute periods of interruption of the coronary return, interspaced by 90 second recovery intervals. This technique fails to provide for the frequently larger bronchial return to the left atrium. Cardioplegia is becoming increasingly popular for some of the more difficult repairs. With the heart at standstill there is no coronary return. Cardiac arrest is usually induced by coronary perfusion with potassium citrate or a mixture of potassium and magnesium salts. The similar use of acetylcholine may be somewhat safer, but is less consistent in production of complete standstill. Cardiac resuscitation usually follows quickly after the clamp across the ascending aorta is released to allow reperfusion of the coronaries with fresh, oxygenated blood. A brief period of massage may be required and electrical defibrillation is indicated if arrhythmias occur.

Although extremely helpful, none of these methods provides a completely bloodless field in the left side of the heart (or in the right side if septal defects are present). Generally speaking, however, the blood return from the bronchial circulation is not so large that it cannot be discarded and replaced by donor blood. Where the bronchial circulation is large, and where prolonged perfusion is required provisions for recirculation of the aspirated blood must be made.

Special anesthetic techniques are required for the patient on cardio-pul-

monary by-pass. Anesthetic gases may be added to the oxygen intake of the machine if the perfusion is extended, or anesthetic-relaxant agents may be administered intravenously.

At the conclusion of the repair, and before the cardiectomy incision is completely closed, the tapes on the cavae are released and the chambers allowed to fill with blood. All air is carefully evacuated before the final sutures are placed in the myocardial wound. If cardioplegia has been employed, or if arrhythmias have developed, the patient may be continued on by-pass until normal contractions are resumed. The experienced surgeon often delays removal of the cannulae until arterial and venous pressures are maintained at satisfactory levels by the heart and until significant ECG alterations have disappeared.

**Cardiac Defects Amenable to Repair Using Total By-Pass** In general defects of the cardiac septa and valves are the chief indications for direct-vision surgical correction. Inasmuch as the lesions are often complicated by anomalies of the great vessels the repairs may be difficult and time consuming—impossible without the aid of total cardio-pulmonary by-pass. It is not the purpose of this discussion to review the embryology and surgical anatomy of congenital heart disease. Defects for which direct-vision repair has been advocated will, however, be listed.

*1. Atrial septum defects:*

- a. Foramen ovale defects;
- b. High septal defects;
- c. Continuous defects of both the foramen ovale and the high septum.
- d. Low defects—persistent ostium primum and common atrio-ventricular canal.

Partial anomalous pulmonary venous drainage is occasionally associated with foramen ovale defects and is, according to Lewis, *et al.*,<sup>7</sup> invariably associated with high defects. Mitral stenosis may coexist with atrial septum defects—especially foramen ovale defects (the so-called Lutembacher's syndrome). Commissurotomy may be performed through the defect prior to its closure.

2. *Ventricular septum defects:*

a. Simple interventricular septum defects;

b. Eisenmenger's complex;

c. Tetralogy and pentalogy of Fallot and "pure" pulmonary atresia. In patients with Eisenmenger's complex the defect is large—even to the extent of a single ventricle—and is associated with right ventricular hypertrophy, dilatation of the pulmonary artery and dextro-position of the aorta. Severe defects of this type may cause high-output cardiac failure very early in life. Babies in this situation are extremely poor risks for corrective surgery. A lesser, alternative procedure, as suggested by Muller and others, may be employed initially to reduce pulmonary artery pressure and protect the pulmonary vascular bed from irreversible changes. This operation is carried out extra-pericardially and consists essentially of narrowing the greatly enlarged pulmonary artery.

The corrective operation for Fallot's tetralogy is preferable to extracardiac shunt operations. Some patients, however, are too ill to undergo the more extensive operation using cardiac by-pass. In such cases Lillihei, *et al.*,<sup>8</sup> have advocated performance of the Potts or Blalock operation initially. The corrective operation can then be carried out months or years later when the patient's

size and clinical condition are more favorable. These authors have repeatedly emphasized the importance of not opening the pericardium in any of these preliminary, palliative operations. If this policy is followed subsequent operations within the heart will be rendered much safer and easier.

Miscellaneous conditions for which cardio-pulmonary by-pass has been suggested as an adjunct to surgical treatment include: removal of intracardiac foreign bodies, removal of intracavitary myxomatous tumors of the heart, and certain operations for coronary thrombosis in the presence of severe myocardial damage.

### **Selection of Patients for Extracorporeal Heart-Lung By-Pass**

The decision to perform open cardiac surgery using the extracorporeal pump is usually a difficult one. Results vary widely from one clinic to another—even where apparatus used is the same. As yet there is no satisfactory method of predicting the outcome of the procedure in individual cases. It is known that very young infants, patients in severe, intractable failure, and those who have had previous intrapericardial surgery are extremely poor risks. It has been suggested that pulmonary biopsy to determine the extent of pulmonary vascular damage may be of value in prognosticating the outcome of surgical correction of defects associated with high pulmonary artery pressures. It is well known that significant improvement and long term survival is unlikely in patients with pulmonary vascular damage. It has also been claimed that pre-operative pulmonary function studies are of considerable prognostic value.

At present the selection of cases with



a view toward minimizing surgical risk can probably best be accomplished by complete diagnostic studies combined with careful clinical evaluation. Every diagnostic aid of established value should be employed—cardiac catheterization, dye dilution studies, angiocardiology, etc. Special study of the patient's pulmonary function with reference to possible irreversible vascular changes should be made.

Despite these efforts to arrive at a correct preoperative diagnosis and an

accurate localization of the lesions there will be occasional cases in which unsuspected anomalies are discovered at operation. For this reason it is imperative that the surgeon have an intimate knowledge of the embryology and surgical anatomy of congenital heart disease. He should also have a wide experience in the surgical laboratory in creating and repairing these defects. Careful and exhaustive study of fresh autopsy material can also be of value to the surgeon.

### Summary and Conclusions

Mechanical cardio-pulmonary by-pass apparatus of the types now in clinical use provide an effective and practical solution to the problem of direct-vision intracardiac surgery. The safety of this technique is dependent upon a number of factors. There can be little doubt that hazards from the use of currently available equipment multiply rapidly when the time of total by-pass exceeds 30 minutes. It is reasonable to suppose that continued improvement and refinement of this apparatus will decrease these

hazards and extend the time during which the heart and lungs can be completely and safely excluded from the patient's circulation. The acquisition of greater skill and experience by cardiovascular surgeons will certainly improve the end results of corrective cardiac surgery.

Increased diagnostic accuracy will also improve end results by aiding in the selection of patients for surgery and by assisting the advance planning of the operation.

### References

1. Stokes, T. L., and Gibbon, J. H., Jr.: Experimental maintenance of life by a mechanical heart and lung during occlusion of the venae cavae followed by survival. *Surg., Gyn., & Obst.* 91:138-156, 1950.
2. Dennis, C., Spreng, D. S., Nelson, G. E., Karlson, K. E., Nelson, R. M., Thomas, J. V., Eder, W. P., and Varco, R. L.: Development of a pump-oxygenator to replace the heart and lungs: an apparatus applicable to human patients, and application to one case. *Ann. Surg.* 134:709-721, 1951.
3. Swan, H., Virtue, R. W., Blount, S. G., and Kircher, L. T., Jr.: Hypothermia in surgery. Analysis of 100 clinical cases. *Ann. Surg.* 142:382-400, 1955.
4. Lillihei, C. W., Cohen, M., Warden, H. E., and Varco, R. L.: The direct-vision intracardiac correction of congenital anomalies by controlled cross-circulation. *Surg.* 38:11-29, 1955.
5. Andreason, A. T., and Watson, F.: Experimental cardiovascular surgery: "the azygos factor." *Brit. J. Surg.* 29:548-551, 1952.
6. Donald, D. E., Harshbarger, H. G., and Kirklin, J. W.: Studies in extracorporeal circulation. II. A method for the recovery and use of blood from the open heart during extracorporeal circulation in man. *Ann. Surg.* 144:223-227, 1956.
7. Lewis, F. J., Taufic, M., Varco, R. L., and Niazi, S.: The surgical anatomy of atrial septal defects: experiences with repair under direct vision. *Ann. Surg.* 142:401-417, 1955.
8. Lillihei, C. W., Cohen, M., Warden, H. E., Read, R. C., Aust, J. B., DeWall, R. A., and Varco, R. L.: Direct vision intracardiac surgical correction of the tetralogy of Fallot, pentalogy of Fallot, and pulmonary atresia defects. Report of first ten cases. *Ann. Surg.* 142:418-445, 1955.



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# Sex In Utero

**An epitome of the attempts to predict it**

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Before the birth of John the Baptist, a physician of the time, Luke, relates that the angel Gabriel appeared before Zacharias, and foretold that his wife, Elizabeth, would give birth to a son.

Physicians of the present day whose duty it is to attend the prenatal patient frequently wish Gabriel would reveal to the prospective parent that sure-to-be-asked question, "Doctor, will be it a boy or girl?"

**The intra-uterine prediction** of sex has undoubtedly fascinated men since the incipience of human reproduction. Fetal sex tests were first described by the Egyptians circa 1350 B.C. In the ensuing years, many tests and many methods of prenatal sex prognostication have been devised by man; few of them have proven any more reliable than that described in that Egyptian papyrus 3307 years ago.

The use of the supernatural is the most primitive of the methods that have been used for prenatal sex determination; this involves revelation, dreams, chance happenings, magic numerology,

astrology and so forth. Supernatural methods are not popular today and persist only in aboriginal cultures and devotees of the tea leaves and crystal balls.

Methods based on observation or investigation can be divided into two broad concepts; the first is that the sex of the fetus can be detected in utero by its position, visualization, or determination using fetal secretions or tissues. The second concept is that the fetus has a quantitative or qualitative effect on the maternal physiology which differs in the two sexes.

**The early Greeks** thought that the uterus had a right and left compartment. Since the belief that the right side was stronger and dominant over the left was wide spread among ancient cultures, it followed that Hippocrates should write that the male fetus occupies the right cavity of the uterus and the female, the left. Thus, a pregnant woman with a greater abdominal prominence on the right or with fetal movement on the right is carrying a male.

Another archaic universal teaching,

which has been shattered only in the present century is that the male "homo" is superior or stronger than the female. Hippocrates stated that a male fetus moves at three months of gestation and a female does so at four. During the middle ages, these pagan myths were reinforced and perpetuated by the literature of the time so that today, we commonly hear them or some variation.

In 1859, Frankenhauser published a paper based on 100 patients in which he observed fetal heart tones; he suggested that the fetal heart tones of 124 or less in the last trimester of pregnancy indicated a male, while those of 144 or more, a female. It is to be regretted that with the passage of time and with common usage by the medical profession, Frankenhauser's observations have been crystallized into a dogma with authority of scripture. The physician who tells his patient that the rate of the fetal heart only indicates the amount of fetal activity is promptly informed that Dr. Black used this method and only last week he correctly predicted that Mrs. White next door would have a girl.

Some 71 years later (1930) three x-ray men, Menees, Miller and Halley were able to correctly predict fetal sex in a limited number of patients by injecting the patient with strontium iodide by means of amnion centesis. They were able in a true lateral view of the breech to see the outlines of the scrotum in four of the twenty-one cases they selected. These authors were primarily interested in methods of amniography, not sex prognostication, and therefore this work was not pursued further.

**The most recent method** which has been adapted to prenatal sex prediction is that based on the presence of the female sex chromatin body which is

found in the cells of the amniotic fluid. Shettles (1956) states that it is possible to determine chromosomal sex at any time after the formation of amniotic fluid. He investigated the fluid obtained at Caesarean section in forty patients. In those cells of the fluid where the infant sex was female, about one quarter to over one half (in different series) contained the typical female sex body. Apparently, the origin of the cells in amniotic fluid is immaterial as long as they are fetal since the cellular chromatin make up of the nuclei is independent of the tissue of origin. Cells must be in the intermitotic phase of mitoses to detect the two X chromosomes which become the identifying female sex body. All female cells in the phase do not show this body as Shettles points out.

According to the newspaper, "Medical News," Makowski working at Minnesota claims to be correct in predicting fetal sex in forty-four consecutive cases; No more than twenty-two nuclear sex bodies per 100 cells foretells a male and more than forty-three nuclear sex bodies foretells a girl. This, of course, is 100% accuracy; a number and a claim which will appear again as other methods of prenatal sex diagnosis are reviewed. Should this work be confirmed, it is still doubtful if a patient's curiosity will overcome her fear of a needle entering her abdomen.

**The second of the natural methods** of sex prognostication is that which assumes that fetal sex has a different quantitative or qualitative effect on the maternal physiology; this is the basis of a great mass of bio-chemical sex tests. Here again, there are several Greek myths which have as their basis the idea of male superiority. Thus, Aristotle believed that the male makes greater de-

mands on the mother and hence, patients with males have a better circulation and greater body warmth. The patient carrying a female has a poor color, various skin imperfections and lesions; while the woman who will have a boy has an early secretion from the breast, and the right breast is heavier than the left. Less we are tempted to feel superior when a patient relates one of these quaint tales, remember there are several modern applications of these concepts, such as, the woman with a male fetus has a high B.M.R., more circulating epinephrine, increase in pH. of the blood, more of the various steroid hormones, or greater vascularity of the retinal vessels. None has been shown to be true.

In 1933, Manger seriously reported an 80% correct diagnosis using a biochemical test described first in 1350 B.C. According to Blakely, the following is the test: If both wheat and barley seed are moistened with urine of a pregnant woman, a boy will be delivered if the wheat germinates and a girl if the barley does.

**The Abderhalden test** furnished the basis of a great number of sex tests which accumulated in the German literature from 1913 to 1924. Pregnancy serum when a male fetus was present was said to result in great proteolysis on its substrate, either placental or testicular tissue. Schaefer in Bumm's Clinic decided that the test was unreliable.

Abraham in 1914 described a serological sex test using a precipitation reaction between human sensitized female rabbit sera and unknown pregnancy serum. Abraham concluded that his test was unreliable.

Manoilaff claimed to be able to dis-

tinguish between the sex of all tissues and secretions, animal, vegetable, or mineral. In 1920, he described a test based on an oxidization reduction reaction using maternal serum. A sex specific hormone which passes into the maternal circulation if a male pregnancy is present changes the oxidation reduction potential of the maternal blood.

Blakely states that a paper on complement fixation test described by Fried in 1925 in which he claimed a 100% accuracy was withdrawn before it could be presented before the New York Academy of Medicine.

Shortly after Ascheim and Zondek described their pregnancy test, there appeared, in the Journal of the American Medical Association, an article by Dorn and Sugarman describing a sex test using an immature male rabbit. The rabbit was injected with the unknown pregnancy urine and the testes then were studied microscopically for evidence of spermatogenic activity. Male pregnancy urine gave positive evidence of spermatogenesis while female pregnancy urine gave none. The authors claimed a 94% accuracy for the test. This was in 1932; two years later, Dailey and others failed to confirm this work but showed that although pregnancy urine did induce spermatogenic activity in the immature rabbit testes, it could not be correlated with fetal sex.

In 1934, Davis (Max) reported an intradermal skin test using testicular extract for which he claimed an accuracy of 90%. A female pregnancy gave no reaction while a 2 + to 4 + erythema wheal indicated a male fetus. This work was never confirmed.

During the late thirties and the forties, many tests for fetal sex appeared in the literature based on the presence

of the steroid hormones in pregnancy blood, urine, or placenta. However, just as the subject appeared to have become completely scientific, there appeared in 1933, an article by Gunther entitled, "Is There a Relationship between time of Delivery, Sex of the Child and Position of the Moon?" In 1949, Greenblatt and Niebergs reported that in 20% of vaginal smears from pregnant women certain cell types could be correlated with fetal sex; they claimed an accuracy of 87%. According to these authors, in a male pregnancy, there is a relative increase of the follicular over the luteinizing

principle of blood gonadotrophin and this is reflected in the vaginal cytology.

**Best publicized** of the recent efforts is the "sputum sex test" of Rapp and Richardson. The test is based on a colorimetric reaction due to the presence of an androgenic or androgenic-like hormone in the saliva of the patient. In a male pregnancy, this hormone is present and the test is positive. Posner (1954) and Rieger (1953) both failed to confirm Richardson's results and Rieger states, "this test has proved no more accurate (in the hands of this investigator) than the operation of chance."

### Summary

Thus, we may conclude that no accurate, practical, method of determining the sex of the fetus in utero exists at present. There will, of course, be such a test in the future and for the practicing physician, it will solve no problems and

give rise to a host of others. In the meantime, the appearance in the press of unconfirmed sex tests with high claims for accuracy should be afforded the same credulity as sea monsters, saucers, and interviews with the small men from Mars.

### Bibliography

1. Adams, Francis: The Genuine Works of Hippocrates, Williams and Wilkins, Baltimore, 1939.
2. Blakely, Stuart B.: Am. J. Obst. & Gynec., 34:322, 1937.
3. Dailey, E. J.: Am. J. Obst. & Gynec., 27:721, 1934.
4. Davis, Max: New England Med. J., 210:421, 1934.
5. Dorn, J. H. & Sugarman, E. I.: J.A.M.A., 103:1659, 1932.
6. Greenblatt, R. B., Niebergs, H. E.: Am. J. Obst. & Gynec., 57:356, 1949.
7. Gunther, W.: Zentral F. Gynak: 62, 1196, 1938.
8. Menees, T. O., Miller, J. D., L. E. Halley: Am. J. Roentgenology, 24:363, 1930.
9. Posner, L. B.: Am. J. Obst. & Gynec., 67:1082, 1954.
10. Rapp, G. W., Richardson, G. C.: Science, 115:265, 1952.
11. Rieger, J.: Obst. & Gynec., 2:161, 1953.
12. Shettles, L. B.: Bull. Sloane Hosp. for Women, 2:69, 1956.

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# Diabetes Mellitus, Insulin and Glucagon

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In the past few years considerable experimental work has been done in an attempt to close the hiatuses in our knowledge of diabetes mellitus. Special interest seems to have centered around "hyperglycemic glycogenolytic factor" *glucagon* and sufficient knowledge has been gained to raise this factor to the status of a hormone. The action of the insulin has been more clearly defined. A new concept has been evolving in the recent literature as a result of our increased knowledge of the sites of action of these two hormones and their effect upon the metabolism in the diabetic patients. An attempt shall be made to outline briefly the facts uncovered by the recent experiments and their interpretation in reference to the trends of freshly evolving concepts of diabetes mellitus and its relation to insulin and glucagon.

Beaser<sup>1-3</sup> in his excellent reviews of diabetes mellitus pointed out the basic defect in the disease lying in the transfer of glucose across the cell membrane. This was arrived at by various workers and using different experimental evidence. Park and Johnson<sup>4</sup> injected tagged glucose in diabetic rats and then measured the glucose versus glucose-6-

phosphate in the tissues of the rats. Drury and Wick<sup>5</sup> studied the sequence of tissue utilization and oxidation of glucose in the eviscerated rabbit. Park and Bornstein<sup>6</sup> noted that glucokinase reaction and glucose oxidation were inhibited by low temperature, and Nekada<sup>6</sup> demonstrated the same to be inhibited by competitive metabolites as glucosamine and betahydroxybutaric acid, yet in all these experiments the transfer defect was clearly demonstrable.

Secondly in diabetic liver slices glucose utilization was found to be reduced as compared to the fructose which does not require glucokinase,<sup>7</sup> and also an increase in the activity of enzyme gluco-6-phosphatase has been observed.<sup>8</sup> This enzyme reconverts the active glucose-6-phosphate to inactive glucose.

In diabetic rats a disturbance at the level of Krebs cycle has been shown. There is a decreased ability of the liver to transform labelled acetate to citrate.<sup>9</sup> A greater proportion of pyruvate is directed to glucose than normal in diabetic liver slices.<sup>10</sup> This is correctible by insulin.<sup>11</sup> The anatomic site of the basic action in Krebs cycle that is oxidative phosphorylation has been placed in mitochondria. In the hepatic mitochon-

dria of the depancreatized cat oxidative phosphorylation is impaired as far as adenosinetriphosphate formation is concerned.<sup>12</sup> The actual site of insulin action in this area may be an important metabolic crossroad for the condensation of acetyl-coenzyme A with oxalacetate.

In alloxan diabetic rats, orally administered fructose had greater protein sparing action than glucose.<sup>13</sup> In human diabetic patients fructose feeding was compared with glucose feeding after insulin withdrawal. Beneficial effects on the blood sugar and acetone were observed only in mild or moderately severe diabetics and only for short periods of time.<sup>14</sup>

The dependence of fat metabolism on normal carbohydrate metabolism with the coenzyme A as the common link between the two has repeatedly been borne out. The oxidation and lipogenesis of labelled glucose was found to be markedly depressed in diabetics as compared with normal tissues. When the insulin was administered to intact animals only the rate of lipogenesis was corrected, with a delay of two and a half days in reverting to normal reminiscent of the restoration of hepatic carbohydrate metabolism.<sup>15</sup>

Carotene is converted to vitamin A in the intestinal wall. In alloxan diabetes this is reduced by 75 per cent and accounts for diabetic carotinemia.<sup>16</sup>

In hypophysectomized rats, insulin treatment caused a marked increase in the amount and percentage of the nitrogen retained, the latter being in almost linear relation to the amount of insulin injected.<sup>17</sup>

**Diabetes Mellitus** Heredity is the determining factor of prime importance in human diabetes. Steinberg<sup>18</sup> has at-

tempted to predict genetically liable diabetics from known diabetic relatives. There is no clear cut evidence of what the inherited defect actually is. Possibility of specific toxic effect of certain metabolites similar in nature to alloxan, on the pancreas has not been borne out. An over production of glucagon by the alpha cells of pancreas has been implicated as a cause of diabetes but no increase of glucagon has been demonstrated in human pancreas.<sup>19</sup>

Another possible mechanism in human diabetes is excessive insulin inactivation but it lacks evidence. The theory of hypoinsulinism still holds the sway. Measurement of the total insulin in normal human pancreas shows remarkable uniformity regardless of the variability of its concentration per gram of actual pancreas.<sup>20</sup>

**Insulin** The hypoglycemic factor of the pancreas was prepared in pure form by Collip and first crystallized by Abel. The basic molecular weight of insulin is approximately 5700, with the empirical formula of C<sub>254</sub>H<sub>377</sub>O<sub>75</sub>N<sub>65</sub>S<sub>6</sub>.<sup>21</sup> It is composed of a total of 43 amino acids of 17 different varieties with approximately 1 to 6 of each type of amino acid per molecule. It would appear that biologic activity of insulin depends upon the arrangement of its constituent amino acids. It is destroyed by proteolytic enzymes of the gastrointestinal tract. While insulin readily associates with zinc and related metals, these are not an integral part of the molecule.

The human diabetic state resembles experimental hypoinsulinism. Metabolic studies of labelled insulin<sup>22,23</sup> have shown that after injection a peak concentration is reached in 5 to 15 minutes largely in three organs, liver, kidney and muscle, with virtually none in the brain.

In the liver the insulin is bound to the cells and in the kidneys it is located in the tubules. After 24 hours only 1 to 2 per cent is present in the urine as undegraded insulin, but fully 50 per cent as degraded metabolic products.<sup>24</sup>

The insulin is inactivated largely in the liver and the kidneys.<sup>22</sup> This "insulinase" is only relatively specific for insulin<sup>24</sup> and can also degrade ACTH, casein, glucagon and growth hormone. This "insulinase" in turn is thought to be antagonized by "anti-insulinase" in body fluids.

The degradation of insulin is decreased by hypophysectomy or thyroidectomy and increased in thyrotoxicosis. This corresponds to the insulin sensitivity in these clinical states. Nephrectomy diminishes the rate of degradation and this may account for the amelioration of diabetes with nephropathy.

Marksy *et al.*<sup>26</sup> demonstrated a decrease in liver insulinase activity in vivo and in vitro after administration of the hypoglycemic sulphonamides.

By comparing the catabolism of injected labelled insulin in diabetics with normal human controls<sup>27</sup> it was shown that at the end of one hour diabetics retained four to five times more insulin, suggesting that diabetic plasma "bound" insulin was preventing its combination with tissues. This could, however, also be explained by the relative lack of saturation of insulin in plasma of diabetics.

**Glucagon** Although glucagon (hyperglycemic glycogenolytic factor) was discovered and named thirty years ago, it achieved the status of a hormone only in the last year or so. Its chemical structure has been established, mode and sites of action have been uncovered and its very important role in carbohydrate

metabolism suggested.

Soon after the discovery of insulin by Banting and Best in 1921, Collip demonstrated a transient but clear rise in blood sugar preceding the hypoglycemia induced by the pancreatic extracts prepared by Banting and Best technique.<sup>28</sup> In 1929, Collins and Murlin<sup>29</sup> conclusively showed that when this pancreatic extract was injected into portal vein, a marked hyperglycemia ensued. If it was injected into a peripheral vein no such early hyperglycemia was noticed.

This early hyperglycemic effect of "insulin" preparations was confusing and paradoxical, but the probability of contamination with some other factor was not seriously considered until 1939 when Lundsgard and his associates<sup>30</sup> compared the Scot<sup>31</sup> preparation with insulin crystallized by Abel's<sup>32</sup> method, in terms of their respective effects on the glucose output of the isolated perfused liver. In 1945 de Duve and his associates<sup>33</sup> revived the interest and demonstrated the presence of "glucon" in American commercial insulin prepared by the Scott method, and its absence in Danish "Novo" insulin, and the estimates of its contamination was placed at 1 to 10 per cent. In 1953 Staub and his associates<sup>34</sup> at the Lilly research laboratories separated glucagon from insulin by selective precipitation and they also isolated it in crystalline form.

Bromer *et al.*<sup>35</sup> have recently been able to establish the complete structure of glucagon by enzymatic digestion and chromatographic analysis. The molecule consists of a straight chain of 29 amino acids, with a molecular weight of 3482.

Bencosme *et al.*<sup>36-39</sup> have presented



convincing evidence that alpha cells of pancreatic islets produce glucagon. The uncinate process of dog pancreas is devoid of alpha cells and they have been able to demonstrate no hyperglycemic activity whatever from the extracts of this area in normal or alloxan diabetic animals.

Bencosme *et al.* as well as Fodd<sup>40</sup> have been able to disprove that cobalt chloride can produce pancreatic alpha cell damage of any significance in the monkey, dog cat, rabbit, rat or teleost fish.

Creutzfeldt and Tecklenberg<sup>41</sup> demonstrated that the hypoglycemia induced by Synthelin A (dicamethylenediguandinehydrochloride) is due to the liver cell damage and not due to pancreatic alpha cell damage as has been hitherto thought. The hypoglycemia induced by synthelin A could not be relieved by epinephrin or glucagon.

Rao and De<sup>42</sup> from India working with rabbits and dogs however presented evidence that the source of glucagon may be lymphatic or connective tissue.

#### *Mechanism Of Action Of Glucagon*

Phosphorylase catalyzes the transformation of glycogen to glucose. Southerland and Cori<sup>43</sup> demonstrated that glucagon causes an increase in the amount of active liver phosphorylase. The amount of active phosphorylase present in the liver cells is the result of a balance between two opposing reactions, namely the inactivation of phosphorylase by a specific phosphatase and the reactivation of resulting "dephosphophosphorylase" by a phosphokinase system. The phosphokinase brings about the resynthesis of the active phosphorylase by a phosphate transfer reaction, which requires adenosinetriphosphate and magnesium. The experimental evidence<sup>44</sup> indicates that glucagon stimu-

lates some portion of the phosphokinase system. It thereby increases the net concentration of liver phosphorylase.

Stunkard, Von Itallie and Reis<sup>45</sup> report that glucagon inhibits gastric contractions and relieves hunger. Glucagon also reduces the volume and acidity of gastric juice in man.<sup>46</sup> In dogs and man<sup>47-48</sup> glucagon has been shown to have a direct action on the kidney tubule thereby increasing the excretion of sodium, chloride, potassium and inorganic phosphate as well as iodine by 200 to 500 per cent.

**Insulin and Glucagon** It was inevitable that the hyperglycemic properties of glucagon would make it suspect as a substance with some sort of "antagonism" to insulin.<sup>47</sup> This suspicion was reinforced when certain experiments suggested the possibility of a tropic effect of growth hormone upon glucagon secretion which has not been substantiated in recent experiments. If one examines this apparent antagonism more closely one finds them on the contrary synergistic in the fashion of sympathetic/parasympathetic system.

The action of insulin about which there is general agreement is, that it somehow facilitates the entry of glucose into cells.<sup>48</sup> If glucagon is to be considered in any sense as antagonistic to insulin or "diabetogenic," it must interfere with this effect of insulin adversely. There is evidence that growth hormone is antagonistic to insulin in this sense. It has been shown by Elrick, Hlad and Witten<sup>49</sup> that glucagon on the other hand actually enhances the peripheral utilization of glucose significantly. The action was demonstrated even in depancreatized dog but the peripheral utilization was not improved after hepatectomy.<sup>50</sup> These workers showed



further that the administration of glucagon and insulin together increases the peripheral utilization of the glucose significantly more than either hormone does by itself.<sup>51</sup> The findings suggest that glucagon has a dual integrated action on carbohydrate metabolism, mobilization of the liver glycogen and enhancement of peripheral glucose utilization. Insulin and glucagon can neutralize each other's action on the liver glycogen and arterial blood sugar thereby making them uniformly constant while also enhancing each other's peripheral glucose utilization. The evidence against the antagonism and "diabetogenic" effect of glucagon has been presented in way of repeated failure to produce permanent diabetes by chronic glucagon administration.<sup>52-54</sup>

For many years, two major types of diabetes have been identified by clinicians. One is characterized by a widely fluctuating blood sugar, insulin sensitivity and a tendency for ketosis to develop readily. The other type displays a more stable blood sugar, some degree of resistance to insulin and considerable resistance to ketosis. The former group is made up primarily of children and young adults, and the latter principally

of middle aged persons who are usually obese. It has been observed that patients who survive total pancreatectomy require relatively small amounts of insulin to control their blood sugar, yet when insulin is withheld ketosis tends to develop in such patients. Recently Alivisatos McCallagh<sup>55</sup> found that in patients with brittle diabetes given glucagon, there was distinctly greater rise in blood sugar than in normal persons or patients with stable diabetes.

These findings suggest that pancreas produces a substance that increases the insulin requirement and protects against ketosis. Thus it is of interest to consider whether glucagon secretion might account for these two conditions.

In mice when alpha cells are selectively destroyed by treatment with diethylthiocarbamate (DEDTC) the mice promptly lose their hyperglycemia and insulin resistance.<sup>56</sup>

Schulman and Greben<sup>57</sup> have employed glucagon to terminate coma in 11 schizophrenic patients undergoing insulin coma therapy. They believe that glucagon offers several advantages over intravenous glucose tube feeding in terminating insulin coma. No untoward reaction was noted in their series.

### Summary

Recent studies suggest that it is possible to augment the effect of insulin on peripheral glucose utilization with glucagon in some diabetic patients. Furthermore any

desired effect on the arterial glucose concentration could be obtained by varying the ratio of glucagon to insulin in the combined infusions over a limited period.

### References

1. Beaser, S. B., *Diabetes Mellitus*, New Eng. J. Med., 251: 698-705, 1954.
2. Beaser, S. B., *Diabetes Mellitus*, New Eng. J. Med., 253: 173-178, 1955.
3. Perk, C. R., and Johnson, L. H., Effect of insulin on transport of glucose and galactose into cells of rat muscle and brain, *American J. Physiol.*, 182: 17-23, 1955.

4. Drury, D. R. and Wick, A. N., Mechanism of insulin action, *Diabetes* 4: 203-206, 1955.
5. Park, C. F., Bornstein, J., and Post, R. L., Effect of insulin on free glucose content of rat diaphragm *in vitro*, *Am. J. Physiol.* 182: 12-16, 1955.
6. Nakada, H. I., Toshiko, N. M., and Wick, A. N., Studies on relationships between insulin, glucosamine, and glucose in rat diaphragms, *J. Biol. Chem.* 215: 803-808, 1955.
7. Reynold, E., Hastings, A. B., and Nesbitt, F. B., Studies on carbohydrate metabolism in rat liver slices, III. Utilization of glucose and fructose by liver from normal and diabetic animals, *J. Biol. Chem.* 209: 687-696, 1954.
8. Lengdon, R. G., and Weakley, D. R., Influence of hormonal factors and of diet upon hepatic glucose-6-phosphatase activity, *J. Biol. Chem.* 214: 167-174, 1955.
9. Frohman, C. E., and Orter, J. M., Tracer studies of acids of tricarboxylic acid cycle, I. Fate of labelled acetate in livers of normal and diabetic rats, *J. Biol. Chem.* 216: 795-799, 1955.
10. Londeu, B. R., Hastings, A. B., and Nesbitt, F. B., Origin of glucose and glycogen carbons formed from c-14 labelled pyruvate by livers of normal and diabetic rats, *J. of Biol. Chem.* 214: 525-535, 1955.
11. Foster, J. M., and Ville, C. A., Pyruvate and acetate metabolism in isolated rat diaphragm, *J. Biol. Chem.* 211: 797-814, 1954.
12. Stadie, W. C., Current views on mechanisms of insulin action, *Am. J. Med.* 19: 257-273, 1955.
13. Sarett, H. P., and Snipper, L. P., Comparison of fructose and glucose in diet of alloxan-diabetic rats, *J. Nutrition* 52: 525-540, 1954.
14. Moorhouse, J. A., Correction of metabolic defects in diabetes mellitus by continuous fructose feedings, *J. Lab. & Clin. Med.* 46: 934, 1955.
15. Renold, A. E., Hastings, A. B., Nesbitt, F. B., and Ashmore, J. J., Studies on carbohydrate metabolism in rat liver slices IV, Biochemical Sequence of Events after insulin administration, *J. Biol. Chem.* 213: 135-146, 1955.
16. Sobel, A. E., Rosenberg, A., and Adelson, H., *In vivo* conversion of carotene to vitamin A in alloxan diabetes, *Arch. Biochemistry* 44: 176-180, 1953.
17. Lawrence, R. T. B., Salter, J. M., and Best, C. H., Effect of insulin on nitrogen retention in hypophysectomized rat, *Brit. J. Med.* 2: 437-439, 1954.
18. Steinberg, A. G., Heredity in diabetes, *Eugenics Quart.* 2: 26-30, 1955.
19. Kenny, A. J., Extractable glucagon of human pancreas, *J. of Clin. Endocrinol.* 15: 1089-1105, 1955.
20. Bloom, B., Fraction of glucose catabolized via Embden-Meyerhof Pathway, Alloxan diabetic and fasted rats, *J. Biol. Chem.* 215: 467-472, 1955.
21. Sanger, R., Thompson, E. O., and Kitair, Amide groups of insulin *Biochem. J.* 59: 509-518, 1955.
22. Elgee, N. J., and Williams, R. H., Fate of insulin in altered metabolic states, *Diabetes* 4: 8-12, 1955.
23. Haugaard, N., Vaughan, M., Haugaard, E. S., and Stadie, W. C., Studies of radioactive and injected labelled insulin, *J. Biochem.* 208: 549-563, 1954.
24. Elgee, N. J., Williams, R. H., and Lee, N. D., Distribution and degradation studies with insulin—1[131], *J. Clin. Investigation* 33: 1252-1260, 1954.
25. Rose, S., and Nelson, J., Studies with radio-iodinated insulin, *Aus. J. Exper. Biol. and Med.* 32: 429-536, 1954.
26. Minsky, I. A., Perisutti, G., and Diengott, D., Inhibition of insulinase by hypoglycemic sulfonamides, *Metabolism* 5: 156-161, 1956.
27. Welsh, G. W., III, Henley, E. D., Williams, R. H., and Elgee, N. J., Distribution and metabolism of insulin labeled with radioactive iodine 1[131] in normal and diabetic subjects, *Diabetes* 5: 15-17, 1956.
28. Collip, J. B., Delayed manifestation of physiological effects of insulin following administration of certain pancreatic extracts, *A. J. Physiol.* 63: 391-392, 1923.
29. Collens, W. S., and Murlin, J. R., Hyperglycemia following the portal injection of insulin, *Proc. Soc. Exper. Biol. and Med.* 26: 485-490, 1929.
30. Lundsgaard, E., Nielsen, N. A., and Orskov, S. L., On the possibility of demonstrating an effect of insulin on isolated mammalian liver, *Scandinav. Arch. F. Physiol.* 81: 11-19, 1939.
31. Scott, D. A., Crystalline Insulin, *Biochem. J.* 28: 1592-1602, 1934.
32. Abel, J. J., Crystalline Insulin, *Proc. National Acad. Sci.* 12: 132-136, 1926.
33. de Duve, C., Hers, H. G., and Bouckaert, J. P., Nouvelles recherches concernant l'action de l'insuline. VI. Action De l'insuline sur le glycogene du foie, *Arch. Internat. de pharmacodyn. et de therap.* 72: 45-61, 1946.
34. Staub, A., Sinn, L., and Behrens, O. K., Purification and crystallization of hyperglycemic glycohemolytic factor (HGF), *Science* 117: 628-629, 1953.
35. Bromer, W. W., Sinn, L. G., Staub, A., and Behrens, O. K., Amino acid sequence of glucagon, *J. Amer. Chem.* 78: 3858-3860, 1956.
36. Benicome, S. A., and Liepa, E., Regional differences of pancreatic islet, *Endocrinology* 57: 588-593, 1955.
37. Benicome, S. A., and Mariz, S., Regional differences in glucagon content of pancreas from alloxanized dogs, *Can. J. Biochem. and Physiol.* 34: 779-782, 1956.
38. Benicome, S. A., and Liepa, E., and Lazarus, S. S., Glucagon content of pancreatic tissue devoid of alpha cells, *Proc. Soc. Exper. Biol. and Med.* 90: 387-392, 1955.
39. Benicome, S. A., and Frei, J., Relation of glucagon to  $\alpha$ -cells of pancreas, *Proc. Soc. Exper. Biol. and Med.* 91: 589-592, 1956.

40. Fadden, J. H., Cytopathologic effects of cobalt on pancreatic islets of many species: islands of Langerhans and cobaltous chloride. *Arch. Path.* 61: 65-75, 1956.
41. Creutzfeldt, W., and Tecklenborg, E., Experimentelle Untersuchungen zur Funktion der A-Zellen der Pankreasinseln und zur Glucagonwirkung. *Arch. f. exper. Path. u. Pharmacol.* 227: 23-61, 1955.
42. Rao, M. R. R., and De, N. N., Influence of hyperglycemic glycogenolytic factor, (HGF) on glycogenolysis in skin. *Acta. Endocrinology*, 18: 299-304, 1955.
43. Sutherland, E. W., and Cori, C. F., Effect of hyperglycemic glycogenolytic factor and epinephrine on liver phosphorylase. *J. Biol. Chem.* 188: 531-543, 1951.
44. Rall, T. W., Sutherland, E. W., Westfall, W. D., Relationship of epinephrine and glucagon to liver and phosphorylase, III, Reactivation of liver phosphorylase in slices and in extracts. *J. Biol. Chem.* 218: 483-495, 1956.
45. Stunkard, A. J., Van Itallie, T. B., and Reis, B. B., Mechanism of satiety: effect of glucagon on gastric hunger contractions in man. *Proc. Soc. Exper. Biol. and Med.* 89: 258-261, 1955.
46. Robinson, R. M., Effect of glucagon on gastric secretion. Presented at annual meeting of Rocky Mt. Regional Organization of Am. Federation for Clinical Research, Denver, Col., March 16, 1957.
47. Staub, A., Springs, G., and Elrick, H., Effect of glucagon on renal excretion of electrolytes. *Federation Proc.* 15: 361, 1956.
48. Staub, A., Springs, V., and Stoll, F., and Elrick, H., Renal action of glucagon. *Proc. Soc. Exper. Biol. and Med.* 94: 57-60, 1957.
49. Elrick, H., Hlad, C. J. Jr., and Witten, T., Enhancement of peripheral glucose utilization by glucagon. *J. Clin. Invest.* 34: 1830-1838, 1955.
50. Elrick, H., Glucagon and regulation of carbohydrate metabolism. *Nature Mag. (London)* 177: 892, 1956.
51. Elrick, H., Hlad, C. J. Jr., Arai, Y., and Smith, A., Interaction of glucagon and insulin on blood glucose. *Journal of Clin. Invest.* 35: 757-762, 1956.
52. Cavallero, C. R., Fiori, R., Malandra, B., and Mosca, L., Neue Ergebnisse zur Glucagonfrage. *Acta neuroveget.* 13: 192-208, 1956.
53. Root, M. A., Effect of chronic administration of glucagon to rats and rabbits. *Proc. Soc. Exper. Biol. and Med.* 87: 108-110, 1954.
54. Hlad, C. J. Jr., Bow, T. M., Rechlele, F. M., and Elrick, H., New apparatus for prolonged constant infusion in unrestrained animal. *Science* 121: 779, 1955.
55. Alivisatos, J. G., and McCullagh, E. P., Studies with glucagon in patients with insulin sensitivity. *J. Amer. Med. Assoc.* 159: 1098-1105, 1955.
56. Mayer, J., Andrus, S. B., and Silides, D. J., Effect of diethyldithiocarbamate and other agents on mice with obese-hyperglycemic syndrome. *Endocrinology* 53: 572-581, 1953.
57. Schulman, J. L., and Graben, S. E., Effect of glucagon on blood glucose level and the clinical state in presence of marked insulin hypoglycemia. *J. Clin. Invest.* 36: 74-80, 1957.
58. Elrick, H., Arai, Y., and Yearwood-Drayton, V., Observation on action of combined glucagon-insulin infusions in diabetic patients. *J. Clin. Invest.* (in press).

A FARMER may be adept with his plough, a surgeon with his scalpel; yet neither can accomplish much without deep insight into the processes of growth. The farmer must know his soil, the surgeon the tissue with which he deals. Only in this manner is the surgeon able to recreate the optimum conditions under which tissue regeneration takes place and progressive repair with ultimate healing ensues.

—FROM SURGICAL TECHINIGRAMS by F. M. AL AKI, M.D.

# The New Drugs and the Child

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"Does your child seem anxious and tense? Is he fearful? Is he overactive, destructive, distractible? Does he stutter? Does he wet the bed? Is he a discipline problem? Does he have trouble in school? Is he mentally retarded? Or with cerebral palsy? Well, you can put your minds to rest. The new drugs will solve everything!! Just give the child this or that drug regularly and your worries are over!"

*Don't believe it!* This is simply not true, and extravagant claims like those made above only detract from the real value the newer drugs, called tranquilizers or ataractic drugs, have—when properly used. Trade names, like Thorazine, Serpasil, Miltown, are well known and widely prescribed. Many other drugs are used in the treatment of the emotional disturbances of children, such as phenobarbital, the amphetamines, and Dilantin (which is used in epilepsy). And there are others, with new ones continually coming to the attention of the doctor.

Among the most promising medical advances in recent times are the discovery and increasing use of drugs in the relief and treatment of a variety of emotional disturbances ranging from anxi-

ous, tense states to the most serious illness like schizophrenia. Startling reports, sensational claims, reports of emptying of mental hospital population, "cures" where none were previously possible flood publications today. Indeed, recently, when a new tranquilizer was available, there was such demand for it as to be fantastic and drug stores having a supply were very popular indeed.

Of course, it is wonderful to hear that we have more powerful tools with which to attack the increasing problem, mental illness, which now occupies about one-half of our hospital beds. But, and it is a great big but, there is a wide gulf between claims and well established facts. It takes time and careful scientific investigation to know whether the drugs work, whether they are safe, how long a "cure" lasts, whether when drug use stops does it lead to a return of the illness, what drug or drugs work best for what illnesses.

The tranquilizing drugs are not candy or harmless "happiness pills." While they may make a patient feel better, they

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are no escape from the realities of life nor do they solve problems any more than alcohol or morphine does. Doctors are overprescribing these drugs and their casual use is medically unsound and even may be a public danger, according to warnings by the American Psychiatric Association. And the drugs have produced some alarming side effects when improperly used.

In emotional and mental disturbances, we are confronted by many bewildering symptoms and conditions. The pressure to do something for disturbing symptoms is understandable but this is not enough to throw caution to the winds. Relief or suppression of symptoms may be very desirable and indeed very essential, but emotional problems producing psychological symptoms can be solved only by resolving the problems. Aspirin may relieve a headache but if it is due to an infection, it certainly won't cure the basis of the headache.

Is there an ideal drug? The ideal drug should have a specific, known action on the organism, be not habit-forming or toxic even with prolonged use, be without undesirable complications, and be easily administered and controlled. In my opinion, we have not yet established the ideal drug or drugs for use with adults, let alone with disturbed children. Children do not react to drugs like adults do. Benzedrine may calm a child and stimulate an adult. The nervous system of the child is maturing and often unstable and this affects a drug's reaction.

Children with emotional problems present various behavior and conduct difficulties. They may be aggressive, hostile, defiant, overactive, destructive, have sexual problems, sleep problems, fears, bed-wetting, stealing, lying, tantrums,

be unable to concentrate, have psychosomatic problems, etc. They may be perplexed, worried, unhappy, seriously confused or disorganized. It is rare to find a disturbed child with just one clear-cut symptom. Certainly, the symptoms listed above are distressing to parents and, of course, hinder adjustment to school and playmates. It is usually when a difficult situation is created at home or at school, when problems cause parents trouble or distress that children are brought for help. The child does not seek help. The parents want relief and help for the child.

Despite the many symptoms displayed, the basic core of most of the problems behind the symptoms is anxiousness. Dysharmony between parents, rejection or neglect, pressure toward too high standards, open or subtle, for example, are common in producing problems. Most drugs used today act upon the *"core" of the symptoms, anxiousness, not the causes*. It is true that relieving disturbing symptoms like temper tantrums, destructiveness, bed-wetting lead to greater acceptance of the child and improved relationships.

Drugs used in emotional ills today are only an aid, not a cure. Certainly, it is desirable, and at times even essential, to control a symptom. For example, impulsiveness and overactivity make it hard for a child to concentrate or adjust to a group. Yet, at other times, as in infant's colic, it may be wiser for the parent to take the drug than give it to the crying infant. There is no substitute for a resolution of the problems or conditions underlying and leading to symptom formation.

Another point. The fact that a child improves when given a drug does not always mean that the drug is effective.

For example, all doctors know that a variety of drugs and methods were used to try to control bed-wetting. The value and effect of any drug, it was found, was determined by the real interest of the giver of the drug rather than any special property of the drug. No drug and real interest proved quite effective.

Some of the drugs now available may produce positive changes in different areas of performance—motor, intellectual, social—and the principal aim of drug therapy is to achieve these improvements. The relief of a symptom like impulsive behavior or excessive restless activity helps a child's self-esteem and generally improves his performance. It must be emphasized that the drugs are not innocuous compounds and may cause troublesome and potentially serious side reactions. Most, however, subside with the proper administration of the drug or may be controlled by varying the method of administration.

Sometimes there is the need for the emergency management of the acutely disturbed and agitated child. The most effective group of drugs comes from the antihistamine family, and the one most commonly used is *chlorpromazine* or more popularly known as *Thorazine*. This drug can be given by injection as well as by mouth and frequently relieves the anxiety of the disturbed child. It is relatively safe, even in large doses. Workers report that chlorpromazine makes the aggressive, hostile child more amenable and therefore easier to treat by the specialist in emotional disorders. The overactive behavior or the very withdrawn behavior of the extremely disturbed child often improves. Again and again, the reports state that when the disturbed behavior is controlled, the

child becomes accessible to therapy. However, in children with severe brain damage, improvement is much less marked, often with large, sleep-inducing doses necessary to reduce overactivity. Obviously, if the child is less disturbed he can learn better and make a better adjustment to a group.

Jimmy was a determined little lad of six. His parents related that he was always a finicky eater, that he resisted toilet training, was quite demanding and controlling. They could see their part in his difficulties but what disturbed them was that after a fire in a neighboring house, Jimmy was very afraid of fire engines, of the dark, would not sleep in his room alone, was afraid of bomb drills at schools, kept asking his parents, "Will our house be on fire?" "Does the siren mean a fire?" At night he had screaming nightmares. He was an acutely anxious child. What had happened was that the fire had merely been the trigger, the last straw, to set off anxious symptoms. The fear of fire was not the basic cause as was later determined in treatment. Because Jimmy was so acutely fearful, he was given appropriate doses of *Thorazine*, which markedly subdued his panic and helped the treatment process. The drug did not cure and was discontinued when treatment had continued long enough to resolve some of the causes.

The antihistamine group has been used for a wide variety of other symptoms with a fair record of good results. In some cases, even tics have been controlled and disturbing head banging and body rocking improved.

*Thorazine* is widely used in pediatric practice, and again the basic action in most instances is upon the anxiousness.

Cases have been reported where severe, persistent nausea and vomiting have been controlled, where severe pain is lessened and where a smoother course for the surgical patient is obtained. There are many medical conditions like acute gastroenteritis, acute respiratory disease, after general anesthesia, where nausea and vomiting are troublesome. Anticipation of pain from infection, operations, procedures like dressing burns, setting fractures, suturing lacerations, etc., is common. Thorazine administration helped make the child more comfortable.

The drug is not without its side effects. Drowsiness, dryness of the mouth, mild fever, nasal congestion are some, and usually disappear. Once in a while there appears a jaundice reaction and the drug is promptly discontinued. Occasionally, skin rashes and sensitivity to sun exposure appear. So, you see, valuable and relatively safe though the drug is when properly given, there can be harmful side effects.

*Benadryl*, or diphenhydramine hydrochloride, another antihistamine drug, seems to be more effective with the overactive, impulsive behavior often associated with brain damaged children, like those with birth injuries or acquired injuries. Such a child really cannot fully control his behavior. He disrupts a group, antagonizes those about him, tolerates frustration poorly, and is often destructive. His behavior is due to an overstimulated nervous system, and Benadryl seems to dampen the disturbing internal stimuli. The diminishing or elimination of such symptoms is a first step to the creation of new and more favorable patterns of behavior.

Carrie was a cute looking, blonde, little 8-year old, who seemed never to

be able to settle down. She was restless, distractible, touched and picked up everything in the room. She could not concentrate well enough to learn, and none of the children would play with her. They complained she hit them when the game wasn't going to her liking, and no one wanted to be friends with her. When she was born she was premature and a "blue baby." She developed more slowly than is normal, and, too, when she was six years old she was hit by a car while riding a bicycle and unconscious for a time. Thorough medical study concluded Carrie's behavior was based on her definite brain damage. Her intelligence was within normal limits. In addition to informing the parents how to manage Carrie, she was placed on appropriate amounts of Benadryl with sufficiently good results so that she could go to a special school. She began to learn and fit into a group. Benadryl was an aid, not a cure, and after 18 months she is still on Benadryl without ill effects.

*Phenergan* (promethazine) and *Frenquel* (azacyloral hydrochloride), trade names of other antihistamines, have been found effective with some severely disturbed and agitated youngsters who did not respond to Thorazine. Impulsive, agitated behavior was markedly reduced. Frenquel, one of the newer interesting drugs, seems to decrease impulsive behavior and better organize the individual. It frequently softens the presenting symptomatology of the disturbed child and makes him more amenable to the other therapeutic procedures and routines. Its use with adults is to block the hallucinations such as are seen in schizophrenia, a very serious illness. It still is being studied to determine its uses.



*Reserpine*, a rauwolfia root preparation, is derived from an ancient medicinal shrub of India and better known by its trade name, *Serpasil*. It produces in many a calming effect, a sedative effect, but not the sleepy effect of the barbiturates (like phenobarbital). The drug is very valuable in adult psychiatry but most marked in its side effects. Its results with children are somewhat unpredictable and variable because of its special action on the nervous system. The dosage has to be highly individualized.

Good results have been reported when used with the regular anticonvulsant drugs in the treatment of epilepsy. Karen, 9, suffered from convulsions since three and was on Dilantin, which controlled her seizures fairly well. But, with a disturbed home situation, she became a serious behavior problem in school as well as at home. The emotional tension served to precipitate more frequent seizures and dilantin alone did not control them. Placed on small amounts of *Serpasil*, in addition to her regular drug, her behavior dampened remarkably. She and her family were referred to a local clinic for help with the distressing problems, with the recommendation that *Serpasil* use not be discontinued until the tense home situation was resolved.

Improvement has been reported in the behavior of disturbed, aggressive children and adolescents. Performance, *not the intelligence*, of mentally defective children is reported improved, and many who could not be taught to do things before learned to perform many useful acts. It has been reported to be helpful in relieving tension, restlessness, noisiness, agitation and assaultiveness.

Gary was a markedly mentally re-

tarded 10-year-old, who was extremely aggressive, destructive and assaulted anyone who refused him what he wanted. He showed neurological signs, indicating considerable brain damage. Gary could not be taught anything, had to be supervised constantly and was placed in a special home where they had a hard time coping with him. Placed on a reserpine compound, he became quite manageable and to the surprise of the home could be taught to care for himself and do simple, useful tasks. He is still on *Serpasil*.

The drug is described as producing sedation, tranquility, improved behavior and a more cooperative attitude toward psychotherapy and other forms of treatment. As noted, children who are seriously disturbed show great variability in their nervous system controls and responses, and hence the action of reserpine is often completely unpredictable. Again, it is not without side effects, too, although these are better known with adults. Depressed feelings, nasal stuffiness, drowsiness, feelings of fatigue or weakness, loose stools, are among the side effects described.

Terror prevents learning. By reducing fear, tranquilizing agents may permit corrective emotional experiences. Control of disturbed behavior makes life simpler for parents, schools and children. They are no substitute for accurate diagnosis and treatment of underlying causes. They are not effective for all children and do not provide a guarantee against a later relapse.

Some of the most valuable drugs are in the amphetamine group. Those most thoroughly studied are *Benzedrine* and *Dexedrine*, which are mild nervous system stimulants. The majority of children with behavior and conduct dis-



orders become quieter, more cheerful, and relaxed, when the drug is properly prescribed. Many of these children become less tense, anxious, and conflicted. Thus improved, it becomes easier for them to socialize, easier for the therapist to work with them, for schools and families to accept them more readily. Recently there has been reported the interesting observation that children with extreme sexual preoccupation and tension, which frequently leads them into frowned upon sexual activities, are markedly improved with appropriate Benzedrine medication, permitting them to function more effectively.

Billy was a large boy of six who was aggressive, controlling and so domineering he could not get along with anyone. In first grade he was so disruptive he spent most of his time in the principal's office, and his mother in conferences with the teacher. A careful medical workup indicated nothing physically wrong. There were many areas of disturbance in his relations with his parents and a little three-year old sister. Appropriate doses of Benzedrine "changed" Billy. After therapy with Billy and guidance of his family, Billy was a "regular" boy and the drug was discontinued.

Benzedrine has been described as decreasing restlessness, noisiness, overactivity, distractibility. Improvement in school adjustment and in academic performance has been described. Withdrawn children often were helped to more active group participation. Children with convulsive disorders and behavior problems also respond favorably.

The amphetamines also have side effects, like irritability, wakefulness, and loss of appetite. But, children have a high tolerance for the drug and with

modification of the dosage most children tolerate the drug.

In children with underlying abnormality in brain function, as diagnosed by characteristic behavior, even though the usual neurological examinations are negative and they do not have a convulsive disorder, many workers have found that *Dilantin* (used in convulsive disorders), the *barbiturates* and other anticonvulsants have helped reduce the disruptive forces within the child who has marked behavior problems. Maturation of the child is helped and non-acceptable behavior minimized. The overactive, impulsive, distractible child can be helped in his living and performance by proper application of these drugs.

The mephestasin group, which includes trade names like *Miltown* and *Equanil*, which have such a wide vogue among adults, has been studied but the results with children are quite inconclusive and disappointing. Certainly the effects are nowhere nearly as positive as with adults. However, much more research needs to be done. The latter observation holds for *Meratran*, which is reported to be a cerebral stimulant and anti-depressant.

Recently a new "arousing" drug, called *Ritalin* by its manufacturers, was introduced and remains to be more thoroughly studied. *Ritalin* is a brain stimulant and properly used is said to overcome the lethargy induced by drugs, arouse the apathetic, and is said to have a stimulating effect on the mentally defective, cerebral spastic child and epileptic patient. Many child patients in institutions and considered so brain-damaged as to be incapable of response showed a marked increase in alertness and activity following use of *Ritalin*,

according to reports. The harmful effects are apparently slight or easily controlled. Much more investigation needs to be done to evaluate this drug. *Tolserol* has been used as a relaxant and some have found it helpful in use with cerebral palsy. *Sparine*, *Compazine*, *Mod-eril*, *Atarax* are commercial names for improved drugs belonging to the families of drugs described above, and they appear to have less side effects.

Some of the highlights of the most widely used new drugs have been reported. The harmful effects thus far have been minor, and whether there will be more reported with prolonged use we don't know. We are in the midst of revolutionary changes in psychiatric treatment in the form of chemotherapy as an aid to the already established treatment procedures. They are not a cure and should not be a fad.

### Summary

1. The new tranquilizing or ataractic drugs are valuable *aids* in the treatment of the disturbed child, when properly used.

2. Relief of disturbing symptoms makes a child more accessible to treatment, improves his self-esteem and performance, and helps him to be more acceptable to family, school, and playmates.

3. Children respond differently to drugs than do adults, and different children respond differently to the same drug. Therefore, no medically untrained person should ever take it upon himself to use the drugs on a child, and physicians, whether general practition-

er, psychiatrist, neurologist, etc. should take special pains to be especially well informed in the *proper use of the drugs* and their dangers.

4. Suppression of a symptom is not a cure. There is no scientific evidence that these drugs cure, and in most instances removal of the drug from a child not properly treated to resolve the problems results in reappearance of symptoms.

5. Fortunately, most of the drugs are quite safe when properly used, but none is without its side effects, which can be harmful at times.

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# Hookworm Infection

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Hookworm infection is a condition which, though not very common in this part of the world, is so important in other areas that it can be placed together with malaria and tuberculosis as the three major chronically disabling diseases. Its importance is growing in large cities like New York because of the immigration of Puerto Ricans. Hookworm infection is the harboring of the parasite in the intestine with or without symptoms. When physical manifestations are present it is termed hookworm disease. The causative organism is either *Necator americanus*, *Ancylostoma duodenale*, or both.

**History** Hookworm infection was known a long time ago. In the Ebers papyrus a disease called AAA is described which is related to worms; it was found to be the so-called Egyptian chlorosis.<sup>31</sup> The disease was described in Brazil, Italy, and Arabia before the etiologic agent was discovered. The first description of *A. duodenale* was made by Dubini in 1838 and the name was given a few years later. Afterward the parasite was associated with Egyptian chlorosis. In 1877 an epidemic of hookworm anemia started among laborers at the Saint Gothard tunnel in Switzerland. Later the infection was spread to the

mines of Germany, France, Holland, England and many other mines of Europe. Because of this widespread incidence, hookworm disease was studied by Italian investigators who recognized its etiology, pathology and symptomatology. Looss in 1896 accidentally discovered that the larvae penetrate the skin. Hookworm was discovered in the USA in 1893 but was differentiated from the old world variety in 1902 when Stiles described *Necator americanus*.

**Etiology**<sup>2,9,15,16,26</sup> The human hookworms are nematodes and belong to the superfamily of Strongyloidea, the two types which shall be studied are *Ancylostoma duodenale* and *Necator americanus*. Both adult worms are round, fusiform, colorless and measure about 1cm in length and 0.5mm in diameter. *Necator americanus* is slightly shorter than *A. duodenale*, its size varying from 5 to 11 mm. The female is ordinarily larger than the male. Both possess a well developed buccal capsule armed with sharp teeth in *A. duodenale* and with a pair of semilunar cutting plates in *Necator americanus*. With its buccal capsule the hookworm fixes itself to the intestinal mucos and is able to suck the host's blood.

The male has a copulatory bursa at

the posterior end and a single testis lies in folds along the course of the intestine. The female has a vulva in the middle of the body; the genital organs include the ovaries, the oviducts, the seminal receptacles, the uteri, ovejectors and vaginae.

The life span of *A. duodenale* seems to be 6 to 8 years; this has been calculated in miners who had gone to non endemic areas. *N. americanus* has a shorter life, around 4 to 5 years, although there has been a case recorded in which an infection lasted for 15 years without hyperinfection.<sup>36</sup>

The cycle is important in understanding hookworm infection. The normal habitat of the hookworm is the small intestine; jejunum, duodenum and rarely the ileum. Occasionally the parasites are found in the stomach.<sup>9</sup> The females produce a never ending stream of eggs which pass through the feces. It has been calculated that the average daily output of ova for a female, *A. duodenale*, was 24,000 to 30,000, and about 10,000 for *N. americanus*. Hookworm infection differs radically from bacterial and protozoal infections in that the organisms do not multiply in the body of the host.<sup>16</sup> In the human being the development of the embryo does not go very far; on reaching the soil, if the conditions are suitable, it proceeds rapidly to a rhabditiform embryo. The hatching takes place in 24 hours if there is an aerated soil with moderate moisture and optimal temperature. The larva, about 250 micra in length, feeds on fecal material; it develops rapidly to a size of 400 micra and molts on the third day. Molting occurs again on the 5th day when the larva reaches 500 to 700 micra in size. Then it becomes the infective filariform larva which is very active.

It is equipped with esophageal spears and possesses a strong phototropism, thermotropism and chemotropism to oxygen. If the human skin (usually hands or feet) comes in contact with the infested soil, the larvae bore through, either following hair follicles, pores or simply through intact skin; then they enter the circulatory system, lymphatics or venules. Carried to the right heart, the larvae pass on to the capillaries of the lungs; there they pierce the endothelium and invade the respiratory system. From the alveoli they pass to the bronchioles, bronchi, trachea, larynx and pharynx. When they reach the throat, the larvae are swallowed and enter the gastro-intestinal tract. In the intestine the larvae undergo a third molt and develop a temporary buccal capsule. The last molt takes place around the 12th day and the larvae become adults.

It takes about 10 minutes for the larvae to perforate the skin and ova are found in the feces after 35 days to 10 or 11 weeks. It is about the same length of time for both *N. americanus* and *A. duodenale*. The infection, according to some authors, can take place directly by swallowing the larva in contaminated foods and drinking water. Some authors deny this possibility saying that the small larva would be destroyed by the gastric juice.<sup>16</sup>

**Pathology** The most important findings in hookworm disease are in the blood and bone marrow. The blood picture shows a microcytic hypochromic anemia without evidence of blood regeneration; reticulocytes are usually less than 3%. Nucleated red cells of the normoblast type were seen in patients with severe anemia. Leucocytes are usually within normal limits or slightly increased; occasional leucopenia with

relative lymphocytosis was observed.<sup>6</sup> In some extreme cases a picture of macrocytic hyperchromic anemia may be observed.<sup>2</sup> Eosinophilia is common usually between 5 and 25%. Some authors have reported eosinophilia of 40% with a maximum of 70%.<sup>13,42</sup>

Bone marrow findings are similar to those of hypochromic anemia. There is increased cellularity, sharp disproportion between erythroblastic and granulocytic series and no disturbances in maturation of the granulocytes.<sup>8</sup> Cruz<sup>40</sup> describes a uniform redness of the bone marrow in contrast to the pallor of all other organs, decrease of fat cells with intense proliferation of the essential cells, and increase of the eosinophilic myelocytes. In the erythrocyte series, he finds many foci where there is a preponderance of orthochromatic erythroblasts. Myeloid metaplasia has been found in the spleen with infiltration by eosinophilic myelocytes and megakaryocytes.<sup>41</sup>

The lesions produced in other tissues are probably due to anoxemia. Cardiac enlargement is a very common finding among patients with severe anemia. Porter<sup>30</sup> in a study of patients with hookworm disease found it in 100% of his cases. Dilatation of the heart may or may not be reducible; some cases present a marked hypertrophy which is not reversible with therapy. Severe cases are accompanied by a diffuse fatty degeneration of the muscle fibers of the myocardium, interfibrillar edema, increase in connective tissue, and infiltration with lymphocytes and polymorphonuclear neutrophils.<sup>26</sup>

Adult worms in the intestine, by their constant sucking, tear off bits of macerated mucosa, causing hemorrhages and chronic enteritis. Secondary bacterial infection may produce small ulcers. In a

few cases *A. duodenale* has been found to invade the intestinal wall, causing destruction of the submucosa and hemorrhage.<sup>35,37</sup> *N. americanus* seems to lack this power.<sup>37</sup> Interstitial hepatitis, fatty degeneration of the liver with dilatation and congestion of the sinuses and hypertrophy of Kupffer's cells have been reported.<sup>1,2,38</sup>

**Pathologic Physiology** Three possible ways for hookworms to produce anemia have been described:<sup>16</sup>

- 1) Direct ingestion of blood from the intestine and hemorrhages from the abandoned bites.
- 2) Hemolysis of the corpuscles in the circulation due to the absorption of hemolytic or other destructive substances.
- 3) A toxic effect on the blood forming organs.

The third possibility was considered several years ago as the most important one. Chandler<sup>16</sup> in his book about hookworm notes: "there seems to be little ground for doubting that the anemia is due primarily to a toxic effect on the blood forming organs." A few years later Rhoads et al.<sup>8</sup> demonstrated that there was very little evidence to support the theory of hemolytic anemia; they based their critics on morphology of the anemia and response to therapy.

As far as the toxic etiology is concerned, it does not seem to hold in view of the arguments presented by Rhoads et al. In their work they have found that with the removal of hookworms, little effect was obtained as far as the anemia is concerned unless iron therapy was added; removal of the parasites does not increase the reticulocytes as it does in other anemias such as the one produced by malaria. The response to hematopoietic agents is marked even if

hookworms are present. The bone marrow picture differs from the one observed in toxic anemias, resembling that of hypochromic anemia.<sup>8</sup> Cruz pointed out that therapy of vermifuge without iron did not bring about reticulocytosis characteristic of strong blood regeneration.<sup>14</sup>

The first possibility seems to be the one usually adopted. Wells<sup>30</sup> on his work with *A. caninum* in dogs showed that each parasite removes about 0.3cc of blood from the dog in 24 hours. In a recent study Roche *et al.*<sup>6</sup> have used red blood cells tagged with radioactive chromium ( $Cr_{51}$ ) to study intestinal blood loss produced by hookworm in men. In a first work<sup>7</sup> they show that if a patient is given his own  $Cr_{51}$  tagged red blood cells via a duodenal tube, fecal recovery is on the average 96.7% of administered radioactivity; urinary recovery is about 1.7%. When tagged red cells are injected intravenously, fecal excretion of radioactivity in normal people was equivalent to 1.27cc of blood. The circulating erythrocytes of patients with hookworm infection was marked with  $Cr_{51}$  and intestinal blood loss due to the hookworms was measured by comparing stool and blood radioactivity. The blood loss was found to range from 2.0 to 251.5 cc per day; it was found to be in rough proportion to the severity of the infection. The blood loss per day and per worm (*N. americanus*) was on the average of  $0.0311 \text{ cc} \pm 0.0173 \text{ cc}$ . In 5 patients with mixed infection blood loss per *A. duodenale* was estimated to be around 0.2cc per day. With iron therapy there was a decrease in fecal radioactivity and an increase in blood hemoglobin. Their interpretation of the phenomenon is: Iron and other components of the blood, which are lost every

day by the sucking activity of the hookworm, are replaced by ingested food. When losses are above daily absorption, or if mechanisms of blood regeneration fail, hemoglobin decreases until a new level is reached at which iron loss is less because of the lower iron content of the blood. It may remain this way for years. If worm load increases or food intake diminishes, or the mechanisms of blood regeneration fail, hemoglobin level drops again.

This goes on to a point in which the hookworm increases its blood consumption, perhaps to compensate for the low content of the blood in certain elements. The disease would then reach the "de-compensated" stage; a vicious circle has been entered and no level of equilibrium can be attained. In these cases transfusions are life saving. Patients reach the hospital as moribunds.<sup>6</sup> The number of hookworms found in the intestine can be enormous. Roche *et al.*<sup>6</sup> found after a vermifuge that their patients harbored from 1600 to 3500 worms. There is a correlation between the number of ova found in the feces and blood. It was found that the loss was 2.74cc/day per 1000 ova per Gm. of stool, with standard deviation of  $\pm 1.5$ .<sup>7</sup> As shown with these figures, the amount of blood loss explains the anemia very well. The daily spoliation produces a severe anemia after a period of time.

But other factors intervene in hookworm disease. As Cruz<sup>14</sup> pointed out: "... we should be misled if we consider the helminth infestation the only determining cause of the anemia in hookworm disease." Severe anemias are always seen in individuals with poor nutrition or with increased requirements such as children or pregnant women.

Edema frequently accompanies hook-

worm disease. Fourteen patients were studied by Villela<sup>11</sup> and 9 were found to have edema. Hypoproteinemia was found to be due to a decrease in the albumin fraction; globulins were unaffected. The author feels that the hypoalbuminemia is due to a lack of protein in the diet and to the state of undernutrition frequently found. The edema is similar to the one found in cases of malnutrition. Cholesterol values were low (average 124 mg.), and were attributed to a diet poor in cholesterol. With a high protein diet and the specific treatment for hookworm disease, a reabsorption of edema occurs. Cruz is probably very right when he calls hookworm disease a deficiency disease.<sup>13</sup>

**Incidence and Distribution** Hookworm infection is widespread and is found all over the world in tropical and subtropical zones. It extends from 45N to 30S latitude.<sup>26</sup> The original location of *N. americanus* was Southern Africa, Southern Asia, East Indian Archipelago and the islands of the Pacific. *A. duodenale* was found on the shores of the Mediterranean, Northern India, North China, and Japan. Migrations of people have changed the distribution. *N. americanus* was introduced in America by negro slaves and immigrants. The range of distribution of the two species overlap and there is frequent mixed infection.

Some of the percentages found in the world: Brazil 30%, Puerto Rico 57%, Cuba 9%, Panama 34%, Italy 7%, Philippines 6%. In Southern USA the percentage varies between 10-42%. Mississippi 24%, Kentucky 15%.<sup>26</sup> A study of school children in Florida revealed a 40% infection, 10% of the infected children were classified as having a moderate to heavy infection; there was a lower

incidence among colored children.<sup>17</sup> Soldiers coming back from Pacific naval duty were found to have frequent hookworm infection, from 3.3 to 8.5% according to the authors, usually there was a light infection.<sup>27</sup> In NYC this is not a public health problem because of the sanitary conditions. Only one case of hookworm infection was acquired in New York.<sup>5</sup> An average of 143 cases, in which ova were identified in the stools, was found each year between 1947 to 1951 at the Tropical Disease Laboratory of the NYC Department of Health. Most of the cases are found in immigrants from Puerto Rico. Hookworm infection is by no means a rare finding in Puerto Ricans in New York.<sup>5</sup>

Hookworm infection is more frequent between the ages of 13-19, but occasionally the maximum infestation is seen among young children. It is more frequent in males and white people seem to be more susceptible. A certain immunity against reinfection has been observed.<sup>15</sup>

**Symptomatology** As was pointed out in the beginning, hookworm infection and hookworm disease are different. The infection is characterized by the presence of hookworm in the intestine with or without symptoms; in the world millions of people are infected without knowing it; they do not have any anemia.<sup>17</sup> It has been said that if the patient has less than 25 worms there is no symptomatology.<sup>33</sup> This is not always true because there are multiple factors which intervene, such as nutrition, resistance susceptibility, food habits, etc.

There are two classes of symptoms, the ones produced by the larvae and the ones produced by the worms themselves.

● The first manifestation of hookworm infection is many times characterized by



a pruritus of the feet, hands or whatever part of the body has come in contact with the penetrating larvae. It is the so called ground itch or dew itch which is a local pruriginous dermatitis sometimes accompanied by edema and erythematous papulovesicular eruption.<sup>9,10,16,26</sup> It disappears in about two weeks unless a secondary infection supervenes. This is not at all unfrequent. Some sensitive individuals may develop urticaria.<sup>1,12,26</sup>

When the larvae pass through the lungs, micro-traumas are produced and small hemorrhages occur. If the number of larvae is great, it may produce an infiltration of the alveolar tissue. Lobular consolidation is occasionally seen; cough, dyspnea and sometimes hemoptysis ensue, although this is rather uncommon.<sup>1,10,26,42</sup> Pulmonary manifestations are less severe than with ascariasis.<sup>24</sup>

In the early acute cases, especially in servicemen during World War II, there was besides the symptoms already seen, acute abdominal discomfort, some fever and no anemia. Anorexia, nausea, vomiting, diarrhea, abdominal tenderness formed part of the clinical picture.<sup>42</sup>

● Hookworm disease is essentially chronic and the symptoms are slow in their progression. Only after treatment the patients realize what it is to feel physically fit.

**Gastro-intestinal Tract** G.I. symptoms are practically always present and are the most common complaint in the patients; many times they are the first to appear.<sup>16</sup> In mild cases they are characterized by "uneasiness in the stomach,"<sup>10,4</sup> irregular appetite but usually increased, epigastralgia, pyrosis and symptoms resembling a peptic ulcer.

In moderate and marked cases, G.I. symptoms increase and are very prominent. Epigastralgia is marked and many

simulate the clinical picture of a peptic ulcer. Many mistakes have been made and some authors<sup>1</sup> have reported ulcer-like niches on X-ray. However studies made in India<sup>3</sup> failed to reveal a higher incidence of peptic ulcers among patients with hookworm infection. X-ray abnormalities of the jejunum and distal duodenum have been described.<sup>42</sup> Usually they consist of a thickening of the rugal folds and increased tone.

Patients have a tendency to eat frequently to relieve their pain. The appetite is increased and may reach the point of bulimia. There is craving for bulky food in large quantity, possibly as an unconscious effort to counteract the irritation of the intestine caused by the hookworm.<sup>16</sup> In certain people pica and more frequently geophagy are seen; the patients have been reported to eat soil, clay, mud, ashes, feathers, hair, charcoal, pencil, slate, coffee grounds and starch.<sup>9,10,16</sup> Pica is more frequently found among children and pregnant women. Cooper<sup>25</sup> in a study about pica has noticed that "it prevails in parts of the world where people suffer from a dearth of food and from a diet deficient in some important constituents.

Flatulence, diarrhea or constipation are very frequent; in some cases nausea and vomiting appear.<sup>13</sup> The tongue is coated, flabby and pale; glossitis is not unusual.<sup>8</sup> Weight loss is always present, in some servicemen stationed in Assam and Burma during World War II the weight loss due to hookworms was from 10 to 40 lbs.<sup>42</sup>

**Cardio-vascular System** C.V. symptoms are a consequence of the hypochromic anemia and are in relation to the severity of the anemia.

In early cases there is a slight dyspnea on exertion, occasional palpitations and



lassitude. When the anemia increases, shortness of breath and palpitations become more and more marked. The pulse is rapid, a systolic murmur can be heard over the precordial area. In severe cases there may be edema of the legs and sometimes anasarca. The picture is one of severe congestive heart failure.<sup>9,15,16,34</sup>

**Neuro-muscular System** Headaches, dizziness, tinnitus, weakness in knees, pain in muscles and joints and easy fatigability are common symptoms.<sup>5,16,32,34</sup> Lack of concentration, retardation in mental processes and apathy give the patients an appearance of dullness; facial expression is melancholic. They look passive to their surroundings, sometimes even "stupid."<sup>34</sup> Paresthesias may be seen in severe cases. Smillie<sup>33</sup> has studied school children with hookworm infection, he found that patients harboring more than 25 worms started showing signs of mild mental retardation.

**Genito-urinary System** Impotence, amenorrhea and loss of libido are manifestations of the anemia. Puberty and sexual development are retarded in children.<sup>23</sup>

**Skin and Mucosa** Besides the skin troubles which were mentioned at the beginning there is a pallor of the skin which can go from mild to extreme and an "indefinable yellow tinge."<sup>34</sup> Loss of subcutaneous fat and grayish appearance of the skin have been reported.<sup>28</sup>

**Diagnosis** Hookworm infection should be suspected in all the patients who come from an endemic area and present an anemia with eosinophilia; if gastro-intestinal symptoms are present this suspicion is greater. However the clinical picture is not sufficient pathognomic to permit a definite diagnosis. It has been estimated that hookworm

disease occurs from one fourth to one half of the infected cases.<sup>26</sup>

The final diagnosis is made when typical eggs are found in the stools. Differentiation between *A. duodenale* and *N. americanus* is not possible with the egg examination. The hookworm ova may be observed in ordinary coverglass preparations. The smear is effective if there are 1,200 eggs per gram of feces or more.<sup>43</sup>

If the infection is light, other techniques are necessary. The salt flotation method consists in preparing an emulsion of 1cc of feces in 10cc of a saturated solution of sodium chloride, it is allowed to stand for half an hour, the eggs are found in the surface.<sup>2</sup> The zinc sulfate centrifugation flotation method is another procedure of diagnosis which increases the number of positive findings.<sup>44</sup> Several methods have been designed to count the ova in the feces; they are useful for surveys.<sup>44</sup>

Two Italian authors<sup>45</sup> recently have tried an intradermal reaction especially valuable in epidemiological surveys. They prepare an antigen from dead hookworms and an intradermal dose of 0.1cc is injected, a positive result is indicated by blanching of the skin and a surrounding erythema of 1-5cm of diameter within 10-20 minutes. The reaction is positive in 93% of the infested persons; false positive reaction occurs in 11.5% of healthy individuals.

The most important element in diagnosis is to keep the disease in mind and examine routinely the feces of every patient who comes from endemic areas.<sup>3</sup>

**Treatment** In the treatment of hookworm disease three important points have to be considered:

- the infection itself, that is the presence of the worms in the intestine.

● the anemia which frequently accompanies the infection.

● the nutritional state of the patient who occasionally presents himself with signs and symptoms of hypoproteinemia and vitamin deficiency.

Before elaborating on the specific treatment for each aspect of hookworm diseases one must determine which should be treated first, when several factors are present. If a patient has hookworm infection with a subsequent anemia, should the anemia or the infestation receive immediate therapy?

Rhoads, Castle *et al.*<sup>8</sup> in an important work done in Puerto Rico, showed that there was very little effect obtained by the simple removal of hookworm without giving iron therapy. In the same work the authors showed that in giving iron therapy without removing the parasites, in 7 cases the hemoglobin passed from 32% to 70% in a month. In the same length of time with the removal of hookworm but without iron therapy, in 6 subjects the hemoglobin went from 33 to 40% (average). "In the severely anemic patient, the administration of the anthelmintics may not be unattended with danger, and certainly causes more discomfort than in a patient already restored to health."<sup>9</sup> This opinion is shared by several modern authors.<sup>6,14,19</sup> Cruz<sup>14,19</sup> considers that iron is the essential drug in the treatment of ankylostomiasis and that with this therapy there is a striking disappearance of clinical symptoms and signs. The usual feeling is that if the patient has a severe anemia, he must be treated first with iron and/or blood transfusions.

● **Removal of The Parasite** However removal of the parasite is essential for the complete cure of the patient. Several treatments have been used in the past

with variable results. Thymol, chloroform, beta-naphthol and extract of male fern have been employed.<sup>9,10,15</sup> The most popular was thymol.<sup>10</sup> Nowadays the most commonly employed drugs are: tetrachlorethylene, hexylresorcinol, oil of chenopodium and carbon tetrachloride.<sup>15</sup>

Carbon tetrachloride has been used for many years with excellent results, but lately it has been abandoned by many authors because of toxic effects. In 1923 Lambert<sup>15</sup> treated 42,000 cases without any death. In another group of 8,000 patients he had three deaths which occurred in small children; post mortem examination revealed liver degeneration. The lethal dose of  $CCl_4$  is variable, a man took 40cc without presenting any symptoms, on the other hand some cases of death have been reported after 1.5cc.<sup>20</sup>  $CCl_4$  produces an irritation of the G.I. tract with occasional bleeding, many times excitability followed by depression, unconsciousness, convulsions, jaundice and toxic necrosis of the liver.<sup>2,19,20</sup>

Several cases of anuria, oliguria due to an acute renal failure have been reported.<sup>46</sup> Extreme toxicity has been noticed both in chronic alcoholics and in those who drank alcohol immediately after treatment.<sup>20</sup> This might be due to an increase in the absorption  $CCl_4$  when alcohol is taken. To prevent these accidents, it has been advised to avoid the use of this product in alcoholics, and it should be given on an empty stomach. Fatty foods and alcohol have to be strictly forbidden.<sup>20</sup> The usual dose is 3cc by mouth in gelatin capsules for the adults.

Tetrachlorethylene has been used for the first time by Hall *et al.*<sup>20</sup> It is the drug of choice as a vermifuge because

of its low toxicity and specificity; it seems to be slightly less effective than  $\text{CCl}_4$ . Its low toxicity is due to a lower solubility in aqueous system. Only one death has been reported so far.<sup>2</sup> One dose removes about 90% of the worms.<sup>19</sup> Usually tetrachlorethylene is not absorbed from the intestine unless enormous amounts are given. In case of intoxication the symptoms are those due to hypnotic, not to chemical changes secondary to liver damage. Dogs were given huge quantities without toxicity.<sup>28</sup> The contraindications of the treatment with tetrachlorethylene are alcoholism and ascariasis.  $\text{CCl}_4$  or tetrachlorethylene when given to a patient infected with ascarids and hookworms may produce serious trouble especially in children. These drugs stimulate ascarids to abnormal activity without killing them. Ascarids can form solid plugs which obstruct the intestine or they can migrate to the common bile or pancreatic ducts or to the pharynx; they may appear in the mouth or nose.<sup>19,29</sup> Before starting the treatment with these drugs, presence or absence of ascarids has to be ascertained. If they are present, they must be removed first by a course of hexylresorcinol. Some authors advocate the use of a mixture of  $\text{CCl}_4$  plus ascardiol or oil of chenopodium<sup>4,19,21</sup> These mixtures would have the advantage of killing both parasites in a single treatment.

The dose of tetrachlorethylene for adults is 3 cc given in hard gelatine capsules or in skimmed milk. Children receive 0.2 cc for each year of age up to 15 years. The night before treatment supper should be light and without fatty food. A cathartic may or may not be given. In the morning breakfast is omitted and tetrachlorethylene is given. It is followed by 15 to 30 cc of Mg sulfate

taken immediately or a few hours later.<sup>9,12,19,28</sup> Fats and alcohol should be avoided during the day. Dizziness, nausea, vomiting, abdominal pain, malaise may occur. To avoid these undesirable reactions, some authors<sup>28</sup> have omitted the purge; they have treated 335,000 patients with good results, the dose had to be larger, around 5 cc; very little reaction was noted in most of these patients. Two weeks after treatment a new stool examination should be done; if ova are still present a new course of tetrachlorethylene is recommended. Hexylresorcinol, though non-specific, removes about 50-70% of hookworms; several courses are necessary for a complete cure. It is the ideal drug for pre-hookworm treatment when ascarids are present. It may be used instead of tetrachlorethylene when the latter is not recommended.

Oil of chenopodium is not very useful because of its toxicity and non-specificity. Usually it is used with  $\text{CCl}_4$ .<sup>4</sup>

● **Treatment of The Anemia** This is a very important point which should be considered first in patients with low hemoglobin. Iron is an essential drug in the treatment of ankylostomiasis<sup>30</sup> but in severe cases the first treatment has to be transfusion of whole blood.<sup>6</sup> The improvement is dramatic. Usually the iron therapy is sufficient and restores the hemoglobin rapidly to a normal level.

Several iron salts can be used. Ferrous sulfate is very commonly employed in daily amounts of 0.6 to 1.2 Gm per os.<sup>2,6,12</sup> Ferrous gluconate can be used in the same dosage.<sup>12</sup> Other authors<sup>8</sup> have employed ferric ammonium citrate in larger doses, around 6 Gm per day, with good results. The iron therapy has to be continued for a certain length of

time, even after the hookworms have been expelled. Iron may be used in a prophylactic way, Wintrobe<sup>32</sup> advises the use of 0.2 Gm of ferrous sulfate daily in the diet when hookworm is widely prevalent and persistent due to deeply rooted habits. Iron improves rapidly all the symptoms even with hookworms still present in the host. Lassitude diminishes, color and strength improve, appetite increases, G.I. symptoms and glossitis decrease.<sup>8,14</sup> This therapy produces a rapid reticulocytosis characteristic of blood regeneration. This is

not seen with vermifuge alone.<sup>14</sup>

● **Treatment of The Nutritional State**  
Cruz<sup>14</sup> called the hookworm anemia "a deficiency disease." Many times patients with hookworm anemia have signs of malnutrition; edema due to hypoproteinemia is fairly common.<sup>11</sup> One of the contributing causes of the anemia is a low standard of living with a subsequent poorly balanced diet.<sup>14</sup> These patients need a high calori-high-protein diet with adequate supply of vitamins. It has to be noted that the improvement of the diet alone will not cure the anemia.<sup>8</sup>

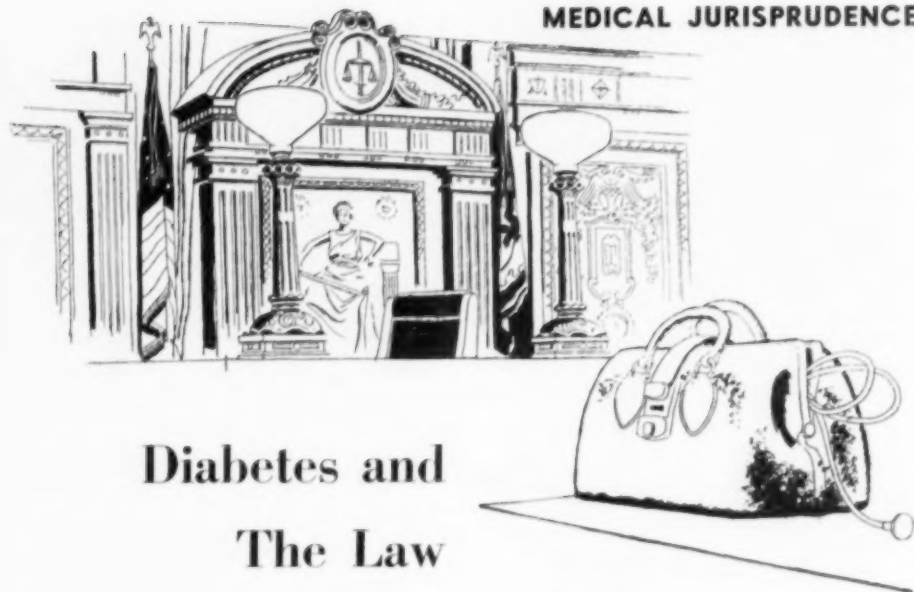
## Bibliography

1. Cannavo, L. and Tigano, F.: Clinica dell'Anchilostomiasi, Giorn. di malattie infettive e Parassit., 8:125, 1956.
2. Cecil, R. L.; Loeb, R. F.: A textbook of Medicine, Ninth Ed., W. B. Saunders Co., Philadelphia, 1955.
3. Leslie H. and Tovey, F. I.: Relation of hookworm infestation with duodenal ulcer, J. Indian Med. Ass., 25:548, 1955.
4. Del Zoppo, R. Contributo allo studio dell'anchilostomiasi con particolare riguardo alla terapia, Nuovi Ann. d'Igiene e Microbiol., 6:194, 1955.
5. Weil, A. J.: Hookworm infection as diagnostic problem in New York City, New York J. Med., 53:1085, 1953.
6. Roche, M.; Perez-Gimenez, M. E.; Layrisse, M.; DiPrisco, E. G. I. bleeding in cases of hookworm infection studied with radioactive chromium [Cr51], Am. J. Dig. Dis. In Press.
7. Roche, M.; Perez-Gimenez, M. E.; Layrisse, M.; DiPrisco, E.: Study of urinary and fecal excretion of radioactive chromium Cr51 in man. Its use in the measurement of intestinal blood loss associated with hookworm infection, J. Cl. Inv. In press.
8. Rhoads, C. P.; Castle, W. B.; Payne, G. C.; Lawson, H. A.: Observations on the etiology and treatment of anemia associated with hookworm infection in Puerto Rico, Medicine 13:317, 1934.
9. Manson's Tropical Diseases, 13th Ed., Cassell and Co. Ltd., London, 1950.
10. Vauzel, M.: Medicine Tropicale, Flammarion Ed., Paris, 1952.
11. Villela, G. C.: Blood chemistry in hookworm anemia, J. Lab. Cl. Med., 22:567, 1937.
12. Fantus, B.: Therapy of uncinariasis, J.A.M.A., 104:472, 1935.
13. Brumpt, L. C.: Déductions cliniques tirées de 50 cas d'ankylostomose provoquée, Ann. Parasit. Humains et Comparée, 27:237, 1952.
14. Cruz, W. O.: Hookworm anemia, a deficiency disease, Proc. Interl. Cong. Trop. Med. and Malaria, 2:1045, 1948.
15. Gradwohl et al.: Clinical Tropical Medicine, C. V. Mosby Co., 1951.
16. Chandler, A. C.: Hookworm disease, The MacMillan Co., 1929.
17. Hoo, M.: Present status of hookworm infection in Florida, Am. J. Trop. Med., 27:505, 1947.
18. Lambert, S. M.: Carbon tetrachloride in the treatment of hookworm disease (50,000 cases), J.A.M.A., 80:526, 1923.
19. Andrews, J.: Modern views on the treatment and prevention of hookworm disease, Ann. Int. Med., 17:891, 1942.
20. Hall, M. C.; Shillinger, J. E.: Tetrachlorethylene, a new anthelmintic, Am. J. Trop. Med. 5:229, 1925.
21. Smillie, W. G.; Pessoa, S. B.: Treatment of hookworm disease with a mixture of carbon tetrachloride and ascaridol, Am. J. Trop. Med. 5:71, 1925.
22. Lehmann, H.: Macrocytic anemia in Central Africans, Lancet, 256:90, 1949.
23. Beaver, P. C.: Hemoglobin determination in hookworm disease, Am. J. Trop. Med., 31:90, 1951.
24. Conn, H. C.: Hookworm infection in veterans, Gastroent., 15:647, 1950.
25. Cooper, M.; Pica, Charles C. Thomas, 1957.
26. Belding, D. C.: Textbook of clinical parasitology, 2nd Ed., Appleton-Century-Crofts, Inc., New York, 1952.
27. Loughlin, E. H.; Stoll, N. R.: Hookworm infection in American servicemen, J.A.M.A. 136:157, 1948.
28. Carr, H. P.; Pichardo-Sarda, M. E.; Aude-Nunez, N.: Anthelmintic treatment of uncinariasis, Am. J. Trop. Med., 3:495, 1954.
29. Lamson, P. D.; Minot, A. S.; Robbins,

- B. H.: The prevention and treatment of carbon tetrachloride intoxication. *J.A.M.A.*, 90:345, 1928.
30. Wells, H. S.: Observations on the blood sucking activities of the hookworm, *Ancylostoma caninum*. *J. Parasitol.*, 17:167, 1931.
31. Bryan, C. P.: *The Papyrus Ebers*. D. Appleton and Co., New York 1931.
32. Wintrobe, M. M.: *Clinical Hematology*. Lea and Febiger, Philadelphia, 1951.
33. Smillie, W. G.: The effect of varying intensities of the infestation on the physical condition of school children. *Am. J. Dis. Children*, 31:151, 1926.
34. Ashford, B. K.; King, W. W.: Uncinariasis, its development, course and therapy. *J.A.M.A.*, 49:471, 640, 1907.
35. Lie Kian Joe and Tan Kok Siang. Helminthiasis of the intestinal wall caused by *A. duodenale*. *Documenta Med. Geograph. et Trop. Amsterdam* 8:75, 1956.
36. Palmer, E. D.: Course of egg output over 15 years period in a case of experimentally induced necatoriasis in the absence of hyperinfection. *Am. J. Trop. Med.*, 4:756, 1955.
37. Bonne, C.: Invasion of the wall of the human intestine by *Ancylostomes*. *Am. J. Trop. Med.*, 22:507, 1942.
38. Hill, A. W., Andrews, J.: Relation of hookworm burden to physical status in Georgia. *Am. J. Trop. Med.*, 22:499, 1942.
39. Cruz, W. O.: *Therapeutica da ankylostome*. O Hospitale, Rio de Janeiro, 1933, June p. 471 in *Trop. Dis. Bull.* 31:798, 1934.
40. Cruz, W. O.: Da medulla ossea na ancylostomose. *Mem. Inst. Oswaldo Cruz*, 27:423, 1933, in *Trop. Dis. Bull.*, 31:797, 1934.
41. Cruz, W. O.: Metaplasia mieloide do baco na ancylostomose. *Mem. Inst. Oswaldo Cruz*, 28:287, 1934 in *Trop. Dis. Bull.*, 31:797, 1934.
42. Rogers, A. M., Dammin, G. J.: Hookworm infection in American troops in Assam and Burma. *Am. J. Med. Sc.*, 211:531, 1946.
43. Keller, A. E.: Methods for the diagnosis of hookworm. *Am. J. Hyg.*, 20:307, 1934.
44. Mackie, T. T.: *A manual of tropical medicine*. W. B. Saunders Co. 1954.
45. Vendramini, R., Magaúdda-Borzi, L.: Proposta di una reazione intradermica per la diagnosi di massa dell'anchilostomiasi. *Nuovi Ann. d'Igiene e Microbiol.*, 6:81, 1955, in *Trop. Dis. Bull.*, 52:1000, 1955.
46. Jennings, R. B.: Fatal fulminant acute carbon tetrachloride poisoning. *A.M.A. Arch. Path.*, 59:269, 1955.

## "MEDICAL TEASERS"

A challenging crossword puzzle  
for the physician  
page 39a



## Diabetes and The Law

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Diabetes mellitus ("sugar diabetes") is a common universal chronic disease of glucose metabolism resulting from an insufficient supply of insulin which is produced by specific cells (beta cells) of the pancreas.<sup>1</sup> It is estimated that there are over 1,000,000 known diabetics in the United States, and at least another million undetected diabetics. One out of every four people in the United States has a diabetic tendency. Diabetes ranks eighth as a cause of death in this country.<sup>2</sup>

Diabetes and automobile accidents are a growing legal problem. Evidence of negligence in diabetic plaintiffs is not uncommon. Dangerous driving and loss

of control of automobiles due to disabling giddiness, confusion and fainting in diabetics are often cited as examples of negligence.<sup>3</sup>

The vulnerability of the diabetic individual to a host of infections, both local and general, is a most important aspect of the disease. Minor and often trivial injuries may initiate spreading infection and gangrene that ultimately requires amputation of an extremity to arrest the process. The relationship of trauma, mental and physical, to diabetes has been the subject of much legal controversy.

**Malpractice and Diabetes** A cashier hurt her thumb while working

in a drug store and received what appeared to be a trivial injury. She was treated by Dr. Werner, a physician designated by her employer and his insurance carrier under the Workmen's Compensation Law. She received medical treatment and continued to work for two weeks. Her thumb became worse and upon the advice of her family physician she informed Dr. Werner that she was a diabetic. Some ten days later as the thumb still did not heal the insurance carrier directed Dr. Werner to discontinue treatment and instructed plaintiff to report to the defendant Dr. Fornell, the Chief of its medical department. Dr. Fornell advised her that the nail of the thumb would have to be removed. Plaintiff told Dr. Fornell of her diabetic condition and that her family physician had advised her not to have any operation or cutting done unless the condition was properly controlled. Dr. Fornell became angry at what he termed interference of outside doctors. He stated that plaintiff was now his patient and should follow his instructions; that the operation was perfectly safe and a trivial matter, and would enable her to return to work promptly. The nail was removed the next day, and plaintiff returned home without receiving insulin treatment. Plaintiff was treated at home for five days, but received no insulin. No blood-sugar tests or urine analyses were taken. The infection spread and on the fifth day she was rushed to the hospital where a portion of her thumb was amputated and long incisions made in her left wrist and forearm. Her diabetic condition was treated. She remained in the hospital two months and then received medical treatment for six months. Her left hand lost its mobility and remained badly disfigured. Plaintiff was awarded

\$6,000 damages. The court said: There is some reason to agree with plaintiff's contention that "any skilled physician in the exercise of ordinary care, particularly one who like this defendant specialized in injuries to workmen, should have had his suspicion aroused concerning a possible diabetic condition when a comparatively slight injury was taking an unusually long time to heal \* \* \* in any event in such a case the least a physician should do is to require of the patient whether there is anything in her medical history to account for the delay in healing, and particularly whether she has any history of diabetes. [Even if the failure to do the above might all be ascribed to errors of judgment for which defendant may not be held liable] there is no justification for the failure of the defendant, when he was informed of the plaintiff's diabetic condition, to administer insulin before the operation and immediately thereafter. Every physician knows of the danger of infection in diabetic patients, and of the danger of operative interference in such cases".<sup>4</sup>

Defendant-physician treated a seven year old boy whose initial ailment was diabetes mellitus. The child's mother, under defendant's instructions, made daily urine tests, gave him insulin, and took him to visit defendant once a month for over a year and a half. During this time the child led a normal active life, gained weight, attended school where he was a good scholar. One evening the mother found considerable sugar upon testing the urine. During the early morning hours the child became unconscious. His mother gave him a small quantity of maple syrup and he revived slightly. The defendant, to whom he was taken



treated the now restless child for diabetic coma. When the child became worse the defendant washed out his stomach with soda and water. At no time did the physician test the urine or take the child's temperature. The child began to suffer from convulsions, was taken to the hospital where he was found to be suffering from profound insulin shock. He suffered cerebral hemorrhage, remained unconscious and paralyzed for a long time. At the time of the trial some two years later, the child was an idiot, partially paralyzed, with a life expectancy of five years. The court held that the physician should have discovered that the child was suffering from insulin shock instead of diabetic coma. The symptoms of the two conditions are quite different. In any event, witnesses testified that urine tests were of the utmost importance in diagnosing the child's condition. The course of treatment followed because of the negligent erroneous diagnosis was harmful and resulted in the subsequent pitiful condition of the boy. The physician was adjudged guilty of malpractice.<sup>5</sup>

Deceased, William Hahn, 33, suffered from diabetes mellitus. He was properly treated by a physician with insulin and remained on a restricted carbohydrate diet for three years. Eleven days before his death he went to defendant Karsunky, a drugless healer who called himself "Dr." Karsunky, who advised Hahn to stop taking insulin, "it is not fit for a dog", and to take his patent medicine. Karsunky also advised a new diet, which did not restrict carbohydrate intake. Deceased died eleven days later in a diabetic coma. Defendant was found guilty of manslaughter and sentenced to twenty years.<sup>6</sup> A similar case arose in Florida in 1940. In that case the court



held that if the prosecution satisfied the jury as to the facts, defendant chiropractor would be guilty of manslaughter.<sup>7</sup>

**Traumatic Diabetes** Whether or not trauma can cause, accelerate, or light-up diabetes is a controversial question among medical experts. The consensus of medical opinion seems to be that injury almost never is the primary cause of diabetes. Severe damage to the pancreas would be necessary. But trauma may be a contributing factor that brings to the surface a latent or unknown pre-existing diabetic condition. An injury may advance the date of onset of diabetes in properly disposed individuals. An active individual who becomes bedridden leads a sedentary life and tends to overeat may develop frank diabetes soon after an injury. The time interval must be a short one, a matter of a few weeks, in medical opinion, if the trauma and the disease are to be associated.



Infection, difficult to treat in a diabetic, which occurs as a result of injury, is a complicating factor which may make a diabetic worse, or accelerate a dormant diabetes. Antibiotics now lessen this danger.

Of considerable importance in the proof of traumatic diabetes is the actual date of onset of diabetes. Examination of the original record in *Lauricella vs. The City of New York*,<sup>8</sup> indicates that to determine whether the diabetes started before the injury or after the injury, statements of the victim's friends, his family, fellow workers and attending doctors must be obtained and critically analyzed. All of these people must be questioned particularly as to their observation of the typical symptoms of diabetes in the plaintiff (viz. excessive thirst, excessive urination, excessive ingestion of food, rapid weight loss, etc.) Evidence of a diabetic heredity must be inquired into.

In *Missouri Pac. R. Co. v. Diffie*<sup>9</sup> an 18 yr. old boy was injured when a train hit his car as he was crossing the tracks. An expert witness testified that the injuries received caused diabetes in the boy which would grow progressively worse. There was no injury to the pancreas. The plaintiff was awarded \$15,000 damages. The Court said:

"It is admitted that traumatic diabetes is a rare occurrence, but we cannot say it does not exist \* \* \* \* diabetes insipidus occasionally follows head injuries."<sup>10</sup>

In a similar New York case experts for the plaintiff testified that diabetes was caused by the accident. Defendant's experts testified to the contrary. The court left the question to the jury who awarded damages to plaintiff. The court said;

"[Plaintiff's experts] admitted that diabetes might have been produced by a large number of causes, and that they could not positively say that in this case it was due to the injuries received, but from all the conditions and circumstances, the fact that before the accident plaintiff's testator was perfectly healthy and well, they expressed the opinion that [the diabetes was caused by the accident]"<sup>11</sup>

Where medical experts admit a causal relationship is possible, a jury can find it in fact exists.

*DePaola v. Gitelman*<sup>12</sup> is a case where the court held trauma experience in an accident and the accompanying nervous reaction did not cause an acceleration and aggravation of a slight diabetic condition which had formerly cleared and become latent and inactive. Six years prior to the accident plaintiff was placed on a diabetic diet which she abandoned in three weeks, claiming the diabetic condition had cleared. Three years later her physician testified to sugar in the urine, but apart from prescribing medication by mouth, did not treat her further. After the accident examination uncovered a very active diabetic condition. At the trial plaintiff's physician testified that nervous reaction following trauma could activate a "controlled" diabetes. He further testified that since plaintiff had not the usual diabetic signs prior to the accident he assumed she was cured. But he admitted that diabetes can exist without these symptoms and that once diabetes occurs, it is controlled rather than cured. Since plaintiff used no outside agents to "control" her diabetic condition prior to the accident the court held it did in fact exist and any increase brought about by nervous upset following



trauma was inconsequential.

But in a Georgia case a different set of facts caused the jury to find that trauma did aggravate plaintiff's diabetic condition. Plaintiff was injured when his car was struck by a truck. Before the collision he had been in good health and was a controlled diabetic. As a result of the injuries, his diabetic condition was aggravated and necessitated a very restricted diet; he was crippled as well. The court held that \$30,000 damages were not excessive.<sup>13</sup>

In a N. Y. case traumatic diabetes was found to be the cause of death by the industrial accident board despite an opinion by the medical referee appointed by the board that death was not due to an accidental blow on the leg. In this case a worker with a prior diabetic condition sustained a blow on his left leg. Prior to the accident he had been an uncooperative patient, failing to test urine, failing to take insulin, overeating. The trauma markedly interfered with his prior diabetes causing vomiting, dehydration, emotional disturbances and

disturbance of sugar tolerance. Diabetic coma supervened and could not be controlled with death following. Was death due to the worker's neglect of his diabetic condition or to the accidental blow on the leg? The board found for the worker.<sup>14</sup>

**Workmen's Compensation** Watson suffered from diabetes mellitus. He had an ingrown toenail removed by a physician, infection set in resulting in a thrombophlebitis. This in conjunction with diabetic gangrene in the big toe caused his death. Watson's wife tried to recover under workmen's compensation claiming trauma at work caused the injury to the toe. Medical evidence did not establish that death resulted from accidental injury and recovery was denied.<sup>15</sup>

In 1936 in the course of his employment, a diabetic employee accidentally bruised his toe. The toenail came off, infection spread, gangrene developed and spread. He had four amputations and the stump never healed. His last illness was diagnosed as pneumonia. The cause of death was said to be nephritis, diabetes and arteriosclerosis. The question at the hearing was whether the injury was the "cause" of death. One month after the injury occurred one of the attending physicians said in a report to the insurance carrier! "In a diabetic, an injury of this kind, though trivial at the outset, may reach most serious proportions and in the case of [deceased] a very slight injury is unquestionably progressing to the point where he will lose his leg if not his life." The court held that the injury accelerated and was the cause of death.<sup>16</sup>

Where the court can apportion the award according to the contribution of

different factors, it will do so. This was the case in *B. F. Avery & Sons vs. Carter*<sup>17</sup> where molten iron accidentally fell upon and burned the top of a toe of an employee and his death, which followed, was held to be due both to an infection thereof and pre-existing diabetes. In most cases, physicians would be hard put to decide how to so apportion cause of death where it is due to a combination of factors.

Deceased was a porter 72 years of age. He was injured by being caught between the door and the casing of an elevator during the course of employment. The employer contended that deceased died as a result of diabetes or influenza. The court upheld an award in favor of deceased's widow. The accident was at least a factor in producing death. The court said:

"If we assume that before or at the time of the accident the decedent was suffering from bodily disease, that does not necessarily defeat compensation. Death may be found as having been caused by an accident, although there was a diseased bodily condition prior to the injury, without which death would not have ensued, where as may be inferred here, the undeveloped and physical dangerous conditions are set in motion producing such result."<sup>18</sup> No attempt was made to try to apportion the award according to the different factors.

Deceased employee was afflicted with diabetes mellitus. She was accustomed to giving herself insulin injections. Shortly after arriving home one evening she became ill. A company nurse was called to attend her, but did not give decreased insulin despite deceased's request. The following morning a doctor attended patient. Two days later she

was taken to the hospital where she died the following day of diabetes. No insulin was given her until she arrived at the hospital. The court held that death was not a direct result of the company nurse's failure to administer insulin and an award in compensation was denied.<sup>19</sup>

In a New York case discussed earlier<sup>20</sup> claimant was awarded \$1700 under the Workmen's Compensation Law for injuries to her thumb. The court held that this award did not bar a suit in malpractice against a physician since the two are in no way inconsistent.

**Insurance** Insured sued on his policy. In response to the question in the application for the policy he denied he had any serious illness or disease. He in fact suffered from diabetes. The court directed a verdict for the insurance company.<sup>21</sup>

It frequently happens that disease and accident are both present in cases arising under accident insurance policies. The question arises whether death or injury resulting therefrom is covered by the policy. Liability exists if the accident is the sole cause of death or disability independently of the disease.

*Maryland Casualty Company v. Marrow* was a case in which deceased insured accidentally stubbed his toe against a chair and broke the middle phalanx. An operation was desirable, but delayed because insured was a diabetic. Gangrene developed and spread and insured's leg was amputated. Despite the operation insured died. The court held there could be no recovery under the policy. If the accident aggravated the disease or if the disease aggravated the effects of the accident and actively contributed to the disability or death occasioned thereby, there can be no

recovery on the policy.<sup>22</sup>

But in a 1938 Pennsylvania case<sup>23</sup> recovery was allowed on a similar policy where the insured sustained a severe burn when he fell asleep while exposing his foot to the rays of a heat lamp to heal an ingrown toe nail which had been partly removed by a chiroprapist. The burn developed a blister, infection set in when the blister broke, amputation was required, and death from blood poisoning resulted. The court held that insured probably would have died of the injury alone even were he not a diabetic.

Accident policies usually provide for the payment of a specific sum if insured becomes totally disabled by an accident within the policy. Many life insurance policies include clauses on total disability. The law reports are replete with cases fought on the question of what is total disability.

A contractor suffered from diabetes, was put on a rigid diet, received daily insulin injections and was forbidden from continuing to engage in his work as a contractor. Prior to his disability he actively worked 12 to 15 hrs. a day. After his affliction he devoted little time to business, limiting himself to supervisory activity. Consequently his business depreciated considerably. The court held he could recover under the total disability clause.<sup>24</sup>

But in *Penn. Mut. L. Ins. Co. vs. Schrader*<sup>25</sup> a bank cashier who also conducted a real estate and insurance agency resigned his position as cashier because of an attack of diabetes, but continued to conduct his other ventures profitably was held not to be totally disabled within the meaning of the policy.

In a 1943 New York case insured was

denied recovery under a disability policy where he refused to submit to insulin treatments for diabetes.<sup>26</sup>

**Damages** Many factors are taken into consideration in evaluating the damages in a case of traumatic diabetes. Diabetes is a chronic disease, and may well have an effect on an individual's general outlook on life and emotional well being. People with a chronic disease tend to become easily depressed or uncooperative or resistant to treatment. A traumatic diabetic has a reduced life expectancy. Diabetics have a peculiar susceptibility to accidents, and have less resistance to the effects of accidents.

In a 1952 case plaintiff received a \$30,000 verdict where his diabetes was severely aggravated, he was unable to work, and suffered great pain. His earning capacity of \$4200 a year at the time of the accident and his life expectancy of over 12 years, medical expenses of \$1,000, and pain and suffering and the fact that plaintiff lost his livelihood were all factors considered by the court in holding damages were not excessive.<sup>27</sup>

Plaintiff was admitted to the hospital with a diabetic ulcer. He was treated and burned by a heat cradle. He developed fever and his diabetes was aggravated. Some gangrene developed, but disappeared. Plaintiff had lost his other leg as a result of gangrene. For four or five months plaintiff was much concerned over the possibility of losing his remaining leg. The court held a verdict of \$5500, \$1000 of which was for medical expenses, was not excessive. Plaintiff was entitled to be compensated for his mental suffering—for his fear of losing a leg.<sup>28</sup>

A young delivery boy fell down an unguarded elevator shaft, and as a result of his injuries, developed diabetes. He

received \$10,000 in damages.<sup>29</sup>

**Miscellaneous Cases** In a 1947 New Jersey case husband attempted to divorce wife on grounds of wife's refusal of sexual intercourse, general indifference of wife's social and domestic obligations, failure to provide meals, and failure to provide food for husband's diabetic condition. The court held there was insufficient evidence to establish husband's right to a divorce.<sup>30</sup>

An award of \$1825 was made to plaintiff, a practical nurse, against deceased's estate. For a period of one year prior to his death plaintiff treated deceased, a diabetic, for gangrenous sores on his feet and legs which required much at-

tendance and care, gave him daily insulin injections, and performed certain household duties as well.<sup>31</sup>

Plaintiff sued for infringement of a patent of a globin-insulin preparation for the control of diabetes. The court held that the preparation was not patentable since no invention was disclosed. It was known how to make the preparation prior to the patent claim. It was simply that no one wanted to do so since the merits of the preparation were not agreed upon. Since no patent was granted there was no infringement and anyone was free to use globin as basic protein in an insulin preparation for medicinal use.<sup>32</sup>

### Summary

1. Diabetes ranks eighth as a cause of death in this country.

2. Failure to administer insulin to a diabetic patient prior to and immediately after an operation amounts to malpractice. Where a slight injury takes an unusually long time to heal, failure to inquire whether anything in the patient's history prevents it from healing properly, and more particularly, whether the patient suffers from diabetes, may amount to malpractice.

3. Trauma is almost never the primary cause of diabetes. But it may be a contributing factor that brings to surface a latent or unknown pre-existing diabetic condition, or aggravates a known condition.

In medical opinion the time interval must be short, a matter of a few weeks, if the trauma and the disease are to be associated.

4. Infection, difficult to treat in a diabetic, often proves a complicating factor in what to another individual would be a minor injury. In workmen's compensation cases the Board often finds that the injury accelerated and was the cause of death of claimant, despite the fact that were it not for the diabetic condition, the injury would be slight.

5. On the contrary in accident insurance cases there is no recovery when death is due to the contributing factors of accident and diabetes. Accident alone must be the cause of injury or death in order for the insured to recover.

6. A diabetic insured cannot recover under a disability policy where he refused to submit to insulin treatment.

7. The following factors are taken into account in evaluating the damages in a traumatic dia-

**betic case: the chronic character of the disease and its effect on the victim; susceptibility of a diabetic**

**to accident; less resistance to accidents and infections; reduced life expectancy; mental suffering.**

## Bibliography

1. Atlas, Donald H., M.D., Ph.D., F.A.C.P., "Diabetes and Trauma", *Medical Trial Technique Quarterly*, 1956 Annual, p. 30.
2. *Idem*.
3. *Law Times*, June 25, 1954, vol. 217, page 336.
4. *Greenstein v. Fornell* 143 Misc. 880 257 N.Y. S 673 678 9 (1932).
5. *Domina v. Pratt* 111 Vt. 166, 13 Ard 198 (1940).
6. *State v. Karsunky* 197 Wash. 87, 84 Prd 390 (1938).
7. *State v. Heines* 144 Fla. 272, 197 Su. 787, 8. 207 Misc. 203 137 N.Y.S. 2d 687, (1955).
8. 212 Ark 55, 205 S.W. 2d, 458 (1947).
9. *Ibid*; page 462.
10. *Eicholz v. Niagara Falls Co.* 68 A.D. 441, 73 N.Y. S 842, 848 (1902). Affirmed 174 N.Y. 519, 66 N.E. 1107 (1903).
11. 137 N.Y. S 2d 684 (1954).
12. *Malone Freight Lines v. Pridmore*, 86 Ga. App. 578, 71 S.E. 2d 877 (1952).
13. *Moniot vs. Empire State Wine Co. et al.* 282 AD 899, 124 NYS 2d 880 (1953).
14. *Watson v. A. M. Byers Co.* 140 Pa. Sup. 245, 14 Ad 201, (1940).
15. *Avignone Freres Inc. vs. Cardillo*, 117 Fd 385, 75 App. D.C. 149 (194).
16. 205 Ky. 548, 226 S.W. 50 (1924).
17. *Geisel v. Regina Co.* 96 N.J.L. 31, 114 A 328 (1921).
18. *Cameron v. Bradley Min. Co.* 66 Idaho 409, 160 Pd. 461 (1945).
19. *Greenstein v. Fornell*, 143 Misc. 880, 257 NYS 673 (1932), *supra*, p. 1.
20. *Hews v. Equitable Life Assur. Soc.* 143 F 850 [CCA 3rd. 1906].
21. 213 F 599, 52 LRA (N S) 1213 (1914).
22. *Accord Romanoff v. Commercial Travellers Mutual Accid. Assoc.* 243 A.D. 725, 277 NYS 291 (1935).
23. *Arnstein v. Metropolitan L. Ins. Co.* 329 Pa. 158, 196 A 491.
24. *Aetna Life Ins. Co. v. Marten*, 192 Ark. 860, 96 S.W. 2d, 327 (1936).
25. 289 Ky. 469, 158 S.W. 2d 964 (1941).
26. *Papas v. Equitable Life Assur. Soc. of U. S.* 266 A.D. 982, 44 N.Y.S. 2d 389 (1943).
27. *Malone Freight Lines vs. Pridmore*, 86 Ga. App. 578, 71 S.E. 2d 877.
28. *Medical and Surgical Memorial Hospital v. Cauthorn*, 229 S.W. 2d 932 (Tex. 1949).
29. *B. Shoninger Co. v. Mann*, 219 Ill. 242, 76 NE 354 (1905).
30. *Franklin v. Franklin* 140 N.J. Eq. 127, 52 A 2d 841 (1947).
31. *Hartlage v. Buckheit*, 254 S.W. 2d 343 (1953).
32. *Burroughs Wellcome & Co. v. Eli Lilly* 150 F. 2d 946 (1945).

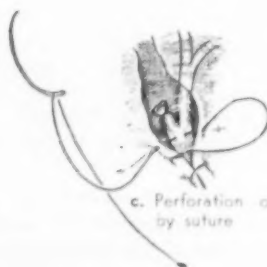
## Clini-Clipping



a. Excision of part of common duct.



b. Ligation of common duct.



c. Perforation of duct by suture

# Clinico-Pathological Conference

New York University-Bellevue Medical Center Post  
Graduate Medical School, Department Of Medicine at  
Bellevue Hospital, Fourth Medical (N. Y. U.) Division

## PATIENT G. R.

The patient was a 33-year-old Puerto Rican housewife who was admitted on 3/27/54 with fever, weakness, generalized pains of three months duration.

She was perfectly well until March 1954 when she began to note loss of appetite, some generalized weakness and fatiguability and weight loss. In May 1954 her throat began to feel sore especially on swallowing but was unaccompanied by coughing. Feverishness was also noted. Shortly after onset of feverishness, headaches, malaise and aching back pain which radiated to knees, ankles and inguinal region. At about the same time she began to have episodes of hematuria always associated with dysuria. She also noted a great thirst and 4-5 times nocturia. During the month prior to admission she had two brief epistaxis without trauma. In addition swollen ankles developed. The anorexia, weakness, malaise and fatiguability became progressively worse. For a month she had taken hardly any food. Denied rashes or purpura.

P.H. Lues in early adulthood. Tested with Salvarsan in P.R.

F.H. Father died at unknown age of pneumonia. Mother died of "old age." 7 siblings, alive and well.

Social. Married in May 1954. No tobacco or alcohol. No exposure to hair dyes, depilatories, cleaning chemicals.

R.O.S. C.N.S. No fainting, convulsions. Occasional hand tremor.

G.I. No nausea, vomiting, epigastric distress. Frequent constipation. No hematemesis or melena.

C.R. No chest pain, orthopnea. Recent ankle edema. No cough, hemoptysis.

G.U. See P.I.

P.E. T. 102.4°, P. 116, R. 36, B.P. 140/60.

Pale, chronically ill female appearing older than stated age. All movements seem to exhaust her.

Skin—Good turgor. No ecchymosis, petechiae.

Head—E.N.T. Normal. No perforations, blood, gum hypertrophy.

Neck—Supple. Trachea midline. Thyroid not enlarged. No masses or nodes.

Chest—Symmetrical. Good expansion.



Breasts—No masses, tenderness, discharge.

Lungs—Dullness to percussion. absent fremitus. No breath sounds at both bases posteriorly. Upper lung fields clear.

Heart—Point of maximal impulse at 6th intercostal space almost at anterior axillary line. Regular sinus tachycardia. PR equals VR equals 116. P2 greater than A2. No murmurs.

Abdomen—Slightly protruberant. Liver felt 2 fingers below right costal margin. Slight fluid wave felt, and shifting dullness percussed. No other masses or organs percussed.

Pelvic and Rectal—Normal.

Extremities—2 + pitting edema of ankles and feet. Fingers show? early clubbing.

Lymphatics—No adenopathy.

Neurological—Physiological.

Rumpel—Leeds—Positive.

#### Admission Laboratory

8/27/54 Urine—Color, Straw; Sp. Gr., QNS; Alb, 0; Sugar, 0.

Blood—Hgb., 5.0; RBC, 1.88; WBC, 8,850; Tr, 24; Poly, 27; Lymph, 28; Mono, 2; Blasts, 1; Myelocytes, 9; Meta I, 9.

Much basophilia. Greatly reduced platelets. 3 nucleated RBC/100 WBC.

9/22—Coomb's test—direct-negative, indirect-negative.

She was transfused with two units of blood shortly after admission.

On 9/1/54—ACTH 25 mgm Q.I.D. B<sub>12</sub> 1000 micrograms I.M. O.D. Aminopterin 1 mgm O.D. P.O. Also Penicillin was started, multiple vitamins.

#### Blood

	Hbg.	RBC	WBC	Diff.					Myelo-	Meta I	Platelets
				Tr.	P.	L.	M.	Blasts	cytes		
8/27	5.0	1.88	8,850	24	27	28	2	1	9	9	Greatly reduced
											Remarks—
											3 nucleated
											RBC/100 WBC.
8/28	5.	1.73	8,950	32	40	16	1	2	3	3	7 nucleated
	Hematocrit 14%										RBC/100 WBC.
8/31	8.0										33,000
9/1	8.5										
9/7	4.0	1.57	7,600	19	45	33	1	0			13,000
											One stem cell
											5 normoblasts
9/14	4.5	1.66	4,250	14	22	53	6	1	12	4	18,000

#### Blood Chemistries

	Sugar	A/G	Chol/Esters	I. I.	Ceph. Flo.	Alk. Pho.	Creat.	Na.	K	CO <sub>2</sub>
8/30	144	4.1/1.7	212/122	8	0	12.8	1.15			
9/2								125	2.8	18 meq.

#### Urine

	color	Sp. G.	pH	Alb.	Sugar	WBC	RBC
8/27	straw	1.007		0	0		
9/8	red	QNS	Alk.	0	0	0	0



9/4/54—Patient lethargic but states she "feels well." Continues to run febrile course. No obvious change. Alkaline Phosphatase noted to be elevated 12.8.

9/7/54—Patient's condition is rapidly deteriorating Hb. 4 grams. Patient is lethargic. Three pints of blood given. No change in physical examination A.C.T.H. and  $B_{12}$  cut.

9/10/54—Grossly bloody stool. Physical unchanged.

9/11/54—Bleeding manifestations at the site of needle punctures but also "fairly large area of petechiae around anterior neck. No nodes noted.

9/13/54—Aminopterin cut.

9/16/54—Cortisone 100 mgm. T.I.D. P.O.

9/20/54—Patient looks terminal today. Febrile. More blood transfused. Patient has never complained of pain.

9/27/54—7:20 A.M. Patient quietly expired.

#### Pathological Findings

At autopsy, the patient proved to have a tumor mass in the stomach about 5 cm. in diameter. Metastatic tumor was found in the lungs, liver, mesentery, adrenal glands, spleen and mediastinal and abdominal lymph nodes. Most of the total marrow space of the vertebral bodies and ribs were also replaced by tumor. Histologically, the tumor was an exceedingly undifferentiated carcinoma, consistent with the gross diagnosis of *carcinoma of the stomach*. Occasional tumor cells were of the signet ring variety—that is, their nuclei

were compressed to one side by a large vacuole (presumably originally filled with mucin) which occupied most of the cytoplasm. This type of cell is characteristic of certain poorly differentiated mucin-producing carcinomas; most frequently they arise in the stomach.

Section of bone marrow showed almost the entire marrow space to be replaced by tumor; while some of the bony spicules were preserved, many had been destroyed by the tumor. Destruction of bone spicules is a common finding when carcinomas have metastasized to bone, but is quite rare in leukemia.

The massive replacement of marrow was reflected in the fact that there was extremely extensive extramedullary hematopoiesis in liver and spleen; this accounted for the fact that the patient was not more anemic than she was.

Since the carcinoma cells were so very numerous in the bone marrow at autopsy, we must assume that the "very primitive stem cells" described in clinical bone marrow smears were actually undifferentiated carcinoma cells. The immature cells found in peripheral blood may have been there because the hematopoietic foci in liver and spleen had ready access to the sinusoids in these organs. However, it should be pointed out that this exceedingly invasive carcinoma was seen histologically in blood vessel lumina, as well as lymphatic channels. It would not have been surprising had tumor cells been seen in smears of peripheral blood.

Case presented from the wards of the Fourth Medical Division, Bellevue Hospital, Dr. Charles Wilkinson, Dir.

## Pilonidal Cysts

Although pilonidal cysts were recognized as early as 1347, they did not assume prominence in surgical practice until the second world war. The frequency with which these lesions are encountered in the young adult male population is evidenced by the fact that in the period between 1941 and 1945, 73,924 patients were admitted to U. S. Army hospitals because of pilonidal disease.

The word "pilonidal" means literally "nest of hair," but about half of these lesions encountered clinically do not appear to contain hair. The term "pilonidal cyst" is reserved for midline cystic lesions which lie in the subcutaneous tissue in the sacro-coccygeal region. In many cases there is a communication between the cyst and the outside by means of one or more sinuses.

**Pathogenesis** Several theories have been advanced about the origin of pilonidal cysts, and there is still no unanimity of opinion on this subject. The most popular theory has been that some primordial ectoderm is pulled below the surface of the rest of the skin and trapped there at the time of closure of the caudal end of the neural tube. Normally the small epithelial-lined sac which results involutes, but if it persists, a "pilonidal cyst" results. Because the immature ectoderm from which it is

derived may form skin and all its appendages, a pilonidal cyst may contain hairs, glands and masses of keratin.

Other theories are a) that constant irritation in the intergluteal fold causes the formation of a crypt and later a cyst, and b) that infection of the subcutaneous tissue in this area is solely responsible for the lesion. The latter thesis does not, however, explain the uniform midline position of the cysts.

The lesions are most common in young, overweight, dark-complexioned, hirsute men.

**Symptoms** Although a dimple in the skin in the sacro-coccygeal area may be noted in early life, pilonidal cysts do not usually make their presence known until after puberty, and especially in early adulthood. The increased growth of hair in this area at that time may bear a causative relationship to the start of symptoms. A cyst which is not infected is rarely symptomatic.

The most common symptom is the chronic or intermittent discharge of small amounts of rather foul-smelling purulent material from a midline sinus in the intergluteal cleft (Figure 1). Maceration of the surrounding skin often occurs, with resultant itching or burning. Long, dark hairs may be seen protruding from the sinus opening. So-called "daughter tracts" often result

from blockage of the main sinus and burrowing of the infection laterally along paths of least resistance (Figure 2).

Although chronic low-grade infection may persist for years with little discomfort, the infection of the cyst with hemolytic streptococcus, staphylococcus aureus, and other grossly pathogenic organisms results in swelling, redness, severe pain, and exquisite tenderness (Figure 3). Unless the acutely infected cyst ruptures spontaneously and drains itself through an adequate-sized opening, surgical incision and drainage is required.

Sudden severe trauma (a kick or fall) or repeated mild trauma (e.g., sitting on a hard bench) may initiate an acute infection, by setting up an inflammatory process which invites infection. Poor

blood supply to the sacro-coccygeal area, and the fact that the intergluteal cleft is warm, moist, hairy, and difficult to keep clean, are other contributing factors.

**Differential Diagnosis** Fistulae-in-ano and perirectal abscesses usually appear closer to the anus. Hidradenitis suppurativa usually presents as multiple furuncles and later shallow sinuses in the perianal area and intergluteal cleft. Determination of the direction of the sinus by insertion of a sterile probe into it, will often establish the diagnosis.

**Treatment** The only satisfactory therapy of pilonidal cysts is surgery. The indications for treatment are a) acute abscess formation, and b) chronic infection with discharge. The high incidence of recurrence of these lesions after surgery has led to the development of numerous different technics, all of which have certain advantages and disadvantages.

The acutely inflamed cyst with abscess formation is the only stage of pilonidal disease that can rightly be considered "office surgery." The treatment consists of local heat by means of sitz baths or warm saline compresses until the lesion is fluctuant. When fluctuance develops, the patient is given light sedation and is placed on the operating or examining table in the prone jack-knife position. The sacrococcygeal and gluteal areas are shaved and the buttocks are retracted laterally with adhesive tape. After the operative area has been surgically prepared and draped, procaine is infiltrated into the skin over the most fluctuant portion of the cyst, and with a #11 scalpel, a generous midline incision is made so that the cyst is opened widely (Figure 3). The pus is evacuated and cultured. Any loose hairs can be removed, but extensive dissec-

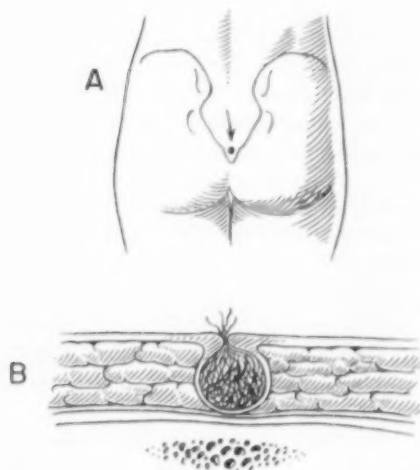


FIG. 1

- A. Midline sacro-coccygeal sinus indicating underlying pilonidal cyst.  
B. Cross-section showing subcutaneous position of cyst.

tion at this time is unwise and should be strictly avoided.

A penrose drain is then inserted into the wound, the buttocks are allowed to return to their normal position, and a large bulky dressing is applied. After a rest of half an hour or so, the patient can usually be allowed to go home with assistance, but should be instructed to rest in bed, advice which is rarely necessary. Codeine is usually ample for the relief of pain. A broad-spectrum antibiotic is advisable. The drain is removed in 24 to 48 hours, and the patient is started on warm sitz baths three times a day. Within about a week the wound is usually fairly well healed, though a persistent sinus often remains.

After a period of quiescence of at least six weeks, surgical excision of the diseased tissue can be carried out. This is distinctly a hospital procedure. There is little doubt that failure to accord pilonidal cysts the respect they deserve has been responsible for very many recurrences. Proper definitive treatment can simply not be carried out on an ambulatory basis.

Briefly, the technics of excision that

are popular are:

a) radical wedge excision of the entire cyst and sinuses down to the fascia overlying the sacrum, and either

- 1) undermining of the wound edges, and careful two-layer closure with catgut and wire, with a bolster tie-over dressing to help obliterate dead-space,
- 2) closure with advancement or rotation flaps from the buttocks,
- 3) primary split skin grafting, or
- 4) packing of the wound.

b) unroofing of the cyst with excision of the overlying tissue and all of the cyst wall except its base, to which the undermined edges of the skin are sutured ("marsupialization").

Excision with primary suture or flap closure is safest in small uninfected cysts. It requires bed rest and careful post-operative wound care, and obstipation for 6 to 10 days, and in the hands of many surgeons carries a rather high recurrence rate. When all goes well, the result is ideal, however. Split skin grafting is an excellent technic, but also requires immobilization and careful post-operative management. Packing of the wound became popular in the armed forces during World War II. It carries the lowest recurrence rate in the experience of many authors, and necessitates only about two days of hospitalization, but the period required for the wound to granulate in and epithelialize is usually six to ten weeks, and frequent sitz baths and dressings are required.

The technic of marsupialization is simple, and although the author has limited personal experience with it, it requires only a short hospitalization, the recurrence rate is reported to be low, and it would appear to warrant the popularity which it has attained.

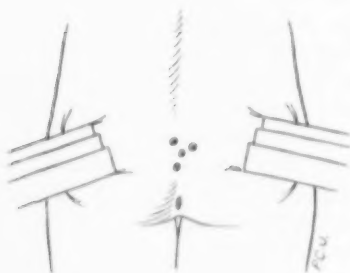


FIG. 2

Openings of lateral sinuses ("Daughter Tracts") in chronically infected pilonidal cyst.

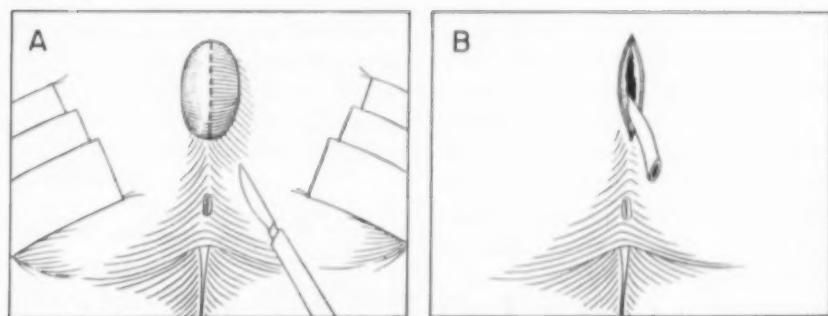


FIG. 3

A. Incision of acutely infected pilonidal cyst (pilonidal abscess). Buttocks retracted laterally with adhesive tape.

B. Acutely infected pilonidal cyst after wide incision and drainage. Penrose drain in lower end of wound.

The use of sclerosing agents or silver nitrate as nonsurgical treatment does not appear to be sufficiently effective to be advisable. The instillation of streptokinase-streptodornase mixtures at the time of and following incision and drainage of acutely infected pilonidal cysts has been reported to be effective in hastening the subsidence of infection

and the readiness of the lesion for excision.

Recurrence and infection are the chief complications of pilonidal cysts, but six carcinomas have been reported within them—three from this country—one basal celled, one squamous celled, and one adenocarcinoma of the sweat gland type.

### Summary

Pilonidal cysts are presumably developmental lesions occurring in the sacrococcygeal area. They are most common in young adult men, and manifest themselves as chronically or intermittently draining sinuses or as acute abscesses. The

treatment of the acute infections is incision and drainage, which can be performed safely in the office. Definitive treatment by surgical excision is rightly a hospital procedure.

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## EDITORIALS

### Changing Viewpoints

Two or three decades ago birth control was a live issue; hectic discussions characterized the subject; these, of course, were sparked by the atrocious social conditions which handicapped a majority of children. Today's higher standard of living and more generally civilized concepts have almost pushed the matter out of reckoning.

Publicists, exhibitionists and reformers have lost one of their most potent themes of the past. Complacency has replaced hysteria. A sane outlook on this score has burgeoned in our society.

### The Kings of Medicine

Some very early American surgery was remarkable indeed. In 1816, John King, of South Carolina, performed an operation for abdominal pregnancy, saving both mother and child. He cut through the walls of the vagina and then

applied forceps, exerting abdominal pressure upon the fetus from above.

Pioneers like King enlist our unqualified admiration, for their work was truly original, unbuttressed by precedent and lonely in execution. We who are supported by ample precedent and the cooperation of able colleagues cannot fully realize the degree of courage and intelligence behind some new ventures. Some of the things that are commonplace today called for first class qualities in the pioneers.

All honor to the John Kings of medicine. What a glorious record can be cited in their behalf.

### Sociology of Cancer

The conquest of cancer, so glibly discussed in many quarters, would not be an unmixed blessing. Consider the effect of the greatly enhanced longevity that would ensue in the general population. One serious consequence would

be an enormous increase in geriatric ailments. We are not arguing that cancer has any beneficent aspects but only advocating a true evaluation of its sociologic effects, assuming a decimation of its incidence.

### South Carolinian Genius

A great surgical landmark was Marion Sims' conquest of vesicovaginal fistula. No one before Sims had been able to *invariably* close such a fistula. The greatest surgeons of the eras antedating Sims, such as Roonhuyze, Fatio, Dieffenbach and Jobert de Lamballe, met with repeated failures and even deaths. The accidental sight of a bent

spoon gave Sims the idea of a speculum that, inserted in the lateral posture (Sims' position), would fully expose the fistula to view and enable repair to be made. By using silver wire to avoid sepsis, and a catheter for keeping the bladder empty while the fistula was healing, Sims succeeded fully in his aim.

That sight of the bent spoon was like Fleming's observation of the behavior of a penicillium mold on a culture plate.

But what a sight it was for the Europeans, Nélaton, Velpeau, Larrey and other great figures in the surgical world, to see Sims stage his magic for their wonderment and emulation.

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**S**URGICAL HEMORRHAGE is controlled by primary or secondary ligation of blood vessels. While secondary ligation of a vessel, after its bleeding cut ends are clamped, is more feasible in most instances, primary ligation is the method of choice whenever possible. It saves precious blood thus reducing the need for replacement transfusions. It also leaves the operative field dry and prevents accidents by insuring good visibility. The blood vessel, lying in its bed, is first located by spreading apart the bed covers. The napping vessel is thus exposed and ligated or clamped before section. Such careful handling is rewarded by less local and systemic reaction, and by more rapid wound healing.

—From SURGICAL TECHNIQUERS by F. M. Al Akl, M.D.

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## Asiatic Influenza

"Sir:

In the now prevalent influenza epidemic in Bangalore (which started the first week of May) I have been consulted in about 187 cases (of both sexes) in which the diagnosis of influenza had been made on clinical grounds only. Your readers may be interested in some of the features.

In the earliest cases the anterior fauces were scarlet with prominent tortuous blue veins, especially on the uvula. The fever ranged between 102°F and 103.5°F; splitting headache, especially in the frontal and temporal region, was a prominent feature. Muscular pains all over the body, pain in the lumbar region persisting for 5-7 days after fever came down (pyrexia lasted 48 to 96 hours) and lassitude were common.

In a few cases (7%) hiccup, pain in the upper part of the abdomen, and nausea were also noted. In three cases only there was mild jaundice and in two of them the liver was palpable just below the xiphisternum; tachycardia for about a week occurred in 40%; and in

about 17% a mild bruit was audible over the mitral region.

It is interesting to note that influenza with severe headache attacked 7 pregnant women (para 1 or 2) during the second to fifth month of pregnancy; but in five of the households I visited, 5 girls pregnant from seven to nine months (para 1, 3 or 5) did not show any signs of fever or headache, though they were in contact with relations of all ages who were having attacks of fever during this epidemic.

No antibiotics were given any of these patients. In view of the conflicting reports about the type and virulence of the virus, it will be interesting to know (a) whether the liver is also affected by the virus, and (b) whether in latter months of pregnancy there is some factor which resists the entrance of the virus.

C. V. Natarajan  
Gandi, Nagar  
Bangalore, 9, India

Reprinted from THE LANCET, Pg. 93, Vol. CCLXXIII, 13 July, 1957.





## Medical Book News

Edited by Robert W. Hillman, M.D.

### Clinical Roentgenology

#### **Roentgen Signs in Clinical Diagnosis.**

By Isadore Meschan, M.D. with the assistance of R.M.F. Farrer-Meschan, M.B. Philadelphia, W. B. Saunders Company, [c. 1956]. 4to, 1,058 pages. 2,216 illustrations on 780 figures. Cloth, \$20.00.

The author presents a new approach to the fundamentals of radiology arranging the text on the basis of radiographic changes rather than on the basis of disease entity. It is difficult to chase diseases through their varied roentgen manifestations. This reviewer, undoubtedly because of years of habit, is not prepared to use a radiological index in differential diagnosis.

Each section is preceded by details concerning roentgen technique and is well illustrated by films and drawings. In some instances, the former are poor, the later — are invariably superb.

Basically, the author covers or touches upon all major areas pertaining to diagnostic roentgenology.

A statement is made that 15-18 "r" per minute upon the skin of the patient during fluoroscopy is acceptable. This

dosage should be cut at least one-half.

This text may find some usefulness in medical schools where radiology is treated more comprehensively than in most. Its brevity precludes its use in resident training other than, perhaps, as a catalogue of differential diagnosis, enabling the trainee to look elsewhere for more detailed information.

This text will find its major area of usefulness in the hands of the non-radiologist doing diagnostic roentgenology. As such, I am sure that it will be viewed with mixed emotion by most radiologists.

SOLOMON SCHWARTZ

### General Medicine

#### **Refresher Course for Practitioners.**

Specially Contributed Articles from the *Journal of the Indian Medical Association*. Volume I. Calcutta, *Journal of the Indian Medical Association*, [1955]. 12mo. 304 pages, illustrated. Cloth, 8 rupees.

This compact volume comprises thirty articles, ranging far afield in medicine, which were published in 1954-1955 to review modern advances in medicine for

the practitioners of India. By and large, the quality of the papers is high and they give evidence of expert editorial supervision. While not addressed to American audiences, Volume I of this series may be judged a successful work which may be read with profit by readers on this continent.

MILTON PLOTZ

### **Therapeutics**

**Current Therapy, 1955. Approved Methods of Treatment for the Practicing Physician.** Edited by Howard F. Conn, M.D. Consulting Editors: M. Edward Davis, M.D., Vincent J. Derbes, M.D., Garfield G. Duncan, M.D., Hugh J. Jewett, M.D., *et al.* Philadelphia, W. B. Saunders Company, [c. 1955]. 4to. 692 pages. Cloth, \$11.00.

This book has become the standard guide to therapy today. In the multitude of therapies this book offers the conservative approaches to therapeutic problems. Its main help is that it routinizes the standard treatment. The introspective reader will certainly not agree with all that is written, and the senior author to counteract that has in places offered more than one method of treatment. This book will make a worthy addition to a physician's library.

IRVING A. ZIMMERMAN

### **A Hospital Story**

**Bellevue Is My Home.** By Salvatore R. Cutolo, M.D. with Arthur & Barbara Gelb. Garden City, N. Y., Doubleday & Company, [c. 1956]. 8vo. 317 pages. Cloth, \$4.00.

Bellevue is not solely to be thought of as a gigantic institution whose statistics are of an astronomical order, or as a miniature city; rather it is "an oasis

of friendliness in a desert of cruel indifference."

Bellevue's average daily population of 9,700 provides a human drama which is the subject of Dr. Cutolo's book. This outlines the background for the outstanding features of medical progress from the colonial period to the present day.

It is a heartwarming story that Dr. Cutolo tells, for "Patients at Bellevue are never regarded as mere medical case histories . . . every effort [is made] to cater to their emotional and social needs, as well as to their medical wants." Many instances are given.

The contents of this notable book should be assimilated by everyone engaged in hospital activities for its educational, social, and technical value; and it is a highly entertaining chronicle despite the tragedy, disaster, and grief that are never far beyond the margin of hospital practice.

ARTHUR C. JACOBSON

### **Physical Diagnosis**

**Physical Diagnosis.** By Ralph H. Major, M.D. & Mahlon H. Delp, M.D. Fifth Edition. Philadelphia, W. B. Saunders Company, [c. 1956]. 4to. 358 pages, illustrated. Cloth, \$7.00.

This is a very fine book on physical diagnosis. All divisions, particularly those of the pulmonary system and the cardiovascular system are extremely well done. The language is easy to understand, and all physical signs are explained well from the physiological point of view. The section on neurological diagnosis is excellent. It is recommended as a basic text for students of physical diagnosis. It can also be of tremendous help to practitioners who

feel it necessary to review some of the finer points in diagnosis.

JULIUS E. STOLFI

### **Diseases of the Chest**

**Diseases of the Chest.** By H. Corwin Hinshaw, M.D. & L. Henry Garland, M.B. Philadelphia, W. B. Saunders Company, [c. 1956]. 4to. 727 pages. 634 illustrations on 288 figures. Cloth, \$15.00.

This is one of the most effective and complete studies of clinical observations of the chest that one can grasp. The scope of the volume is excellent and the breadth of the clinical points emphasized is remarkable. It comes from two clinical professors of Stanford University, H. Corwin Hinshaw and L. Henry Garland.

Modern clinical views are accepted, and the related laboratory, diagnostic, bedside, and pathologic presentations are splendid. Very fully and bedside clinic is enriched with diagnostic data that comprises excellent teaching.

Emphasis in clinical teaching is most important. Four - and - a - half pounds comprise adequate totality of medical review and printed studies.

Diagnostic radiology is prominent in its presentations and the 233 x-ray photographs that appear in the volume are of tremendous excellence and value in clinical teaching.

We truly have a splendid clinical volume. Recent medical teachings are prominent. Case histories, symptoms, physical signs, laboratory data, and radiographic examinations are emphasized in the presentation of this study of diseases of the chest.

The volume is of great value.

FRANK BETHEL CROSS

## **The Roentgen Aspects Of The Papilla And Ampulla Of Vater**

By

MAXWELL H. POPPEL, M.D.

HAROLD G. JACOBSON, M.D.

ROBERT W. SMITH, M.D.

This is a complete presentation of the roentgenologic survey of the anatomy, physiology and pathological states of the Vaterian region. It brings integration and meaning into a complex subject by presenting an inclusive affirmation approach not heretofore attempted.

The abnormalities of adjacent structures (notably the duodenum) are considered. This is especially important in formulating correct differential diagnosis.

Roentgenologically considered, what are the criteria for appraising any given major papilla or Vaterian ampulla as normal or abnormal? The answer cannot be found in the existing roentgen literature so the authors have searched for the answer and set down their findings.

The approach is roentgen study from the basic anatomic (postmortem) and from the practical (in vivo) standpoints. The microscopic pathological findings obtained from surgical specimens and from autopsy material served as a bridge of explanation for those roentgen findings which did not conform to the normal basic anatomical types (including variants).

211 pages 150 illustrations

**\$8.50, postpaid**

CHARLES C. THOMAS • Publisher  
Springfield, Illinois

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# The Social Worker Is On Your Team

**The modern hospital prides itself on the variety of services directed toward total medical care of the patient. One of these services is provided by the hospital social worker. In assisting the patient to a solution of social and economic difficulties, the professional social worker aids the physician in removing hidden barriers which often thwart his medical program.**

JEANETTE R. OPPENHEIMER

Social service as part of medical treatment, though formally introduced in 1905, is not a totally new concept in the total care of patients. However, the social worker, now invested with this responsibility, is a phenomenon of the 20th Century. Dr. George Baehr, in a recent paper, stated that the "family doctor was the social worker of the 19th Century."

Actually, the rapid changes which have occurred in the practice of 20th Century medicine with all its advances and new tools for diagnosis and treatment; have left the average physician little time to treat his patients' social problems, the true "family doctor" has become rare, being replaced by the specialist.

This change has led to the rise of the non-physician who has been trained as a specialist in social work—the professional social worker.

**Pattern** In 1905, at Baltimore, Boston and New York teaching hospitals, recognition was given to the importance of the relationship between illness and social factors, and efforts were initiated to give this factor special consideration in the treatment of patients. Different methods for accomplishing this were developed in these three communities. But Dr. Richard Cabot at the Massachusetts General Hospital, securing the services of an individual experienced in the field of social work and employed by the hospital, set the pattern as we now know it for the practice of social work in hospitals.

Gradually, social workers acquired increased understanding of the back-

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Miss Oppenheimer is Director of Social Service, North Shore Hospital, Manhasset, L. I., New York.

ground of training needed in preparation for their profession. As the profession developed an expanding core of knowledge, techniques and skill, there developed the graduate schools for training for social work. As a result, the typical present-day social worker employed in a hospital has completed four years of college plus two years of study at a graduate school of social work from which he or she holds a Master's degree. In addition, today's social worker has had extensive experience in supervised case work practice, often in a hospital, and special training in problems peculiar to the medical setting.

**Special Knowledge** While there may be variations among individual institutions, the basic function of the social worker in the hospital is related first to the care of the patient. Special knowledge combined with skill as a case worker enables the social worker to relate the social and emotional factors in the background of the individual pa-

tient to his medical problems. The goal is to enhance the physician's understanding and treatment plan, and to enable the patient to make maximum use of the medical care provided him.

Obviously, the ability to remain objective with hostile or uncooperative patient is important. In fact this, together with an understanding of the basis for his behavior, may often be the foundation for the patient's successful participation in medical treatment. Finally, knowledge and ingenuity in the use of social resources often enables the social worker to help the patient mobilize himself into using what is available to him in the community.

It is not simply the knowledge of what social resources exist in the community; the skill in helping individuals to make effective use of these resources is one of the important contributions of social case work. Conversely, when resources are lacking, the social worker often will help find means by which resources may



be developed.

The amount of time required with each patient varies and is not necessarily indicative of the degree of professional skill involved.

**Case of Worry** An example of a case requiring only a brief contact was that of Mrs. A., a 32-year-old married woman. She was referred to the social worker by a head nurse who noted that the patient appeared depressed and worried about her family. The patient, admitted to the hospital the previous day with a post-partum infection, was the mother of six children ranging in age from six years down to the newborn infant of one month. A check revealed that the patient, because of her hospitalization, had been forced to make temporary plans for her family which necessitated her husband remaining home from work. Her husband was a physicist, earning a salary adequate for the family's needs but insufficient to provide full-time housekeeping help.

In a conference with Mrs. A.'s gynecologist, the social worker was advised that the patient would require a couple of weeks hospitalization followed by a prolonged period of convalescence at home. Discussion with Mrs. A., a proud, independent woman, was focused on helping her recognize the validity of a request for assistance from an agency for homemaker service. She was encouraged to discuss the plan with her husband. Once the couple resolved their reluctance to ask for help, the social worker presented their special problem to the family agency, which, though experiencing budgetary limitations, recognized the importance of the medical-social problem and its impact on this family of eight persons. After arrangements were concluded for a homemaker,

the family making a limited financial contribution, Mrs. A. became cheerful and relaxed and was able to remain hospitalized and convalesce sufficiently long enough to anticipate complete recovery.

**Referred for Care** In marked contrast to Mrs. A. was Miss B., a 40-year-old patient who was referred by her private physician to the social worker for nursing home or other forms of chronic care. Miss B. had been hospitalized for about two weeks because of urinary retention related to spinal cord atrophy. Although primarily a neurological problem, she was at the time under the care of a urologist. He informed the social worker that Miss B. was rapidly becoming a paraplegic. She had been in another private hospital three months previously and as an ex-W.A.C. had transferred to a Veterans' Hospital from which she had signed out against advice—and consequently could not be re-admitted to any Veterans' facility for 90 days.

The doctor stated that she could not return home because she roomed out and had no family who could care for her; if she could be referred for rehabilitation, it might be possible for her to function fairly adequately.

From the social worker at the first hospital it was learned that Miss B. had been a difficult patient; she had been unable to accept the chronicity of her illness and adapt her life to this fact. She had conceived an elaborate plan for keeping her father and brother from the knowledge that she was ill, even resorting to the device of forwarding mail out to the Pacific Coast to be re-mailed to them on the pretext that she was there on business.

She had been showered by attention from friends and had manipulated them



to an amazing degree to do her bidding. Her problem was further complicated by the fact that she had become addicted to narcotics during her hospitalization.

**Caution** With this information as a background, the social worker's approach was cautious; for several days the case work interviews were directed solely toward establishing a friendly relationship with Miss B. Eventually, Miss B. was able to ask that the worker communicate with her employer. (Miss B., prior to her illness had held a responsible executive position in a large department store and, though ill for six months, was still receiving full pay.)

Miss B. was somewhat anxious about remaining in the hospital when she recognized very little could be done for her.

This enabled the worker to begin to discuss her need for rehabilitation and, although Miss B. could not accept the probability of a wheel-chair existence, she could begin to admit her need for

prolonged treatment "to restore function in her legs."

Before arrangements could be completed to transfer her to a municipal hospital for evaluation of her potentiality for rehabilitation, the patient developed a new set of symptoms which, in her physician's opinion, were suggestive of progression of her disease and a poor prognosis for life.

Thus, the rehabilitation plan had to be discarded and the patient helped to accept transfer to a Veterans' Administration hospital.

By this time the patient had confidence in the social worker and could discuss her feelings about her illness and previous hospital experience.

Led to recognize that the only realistic plan for her was to reapply for V.A. admission and having come to this decision, once again Miss B. began to manipulate her friends and contacts for a prompt transfer to a V.A. hospital. Though she was unable to by-pass the



90-day regulations, the interval was nearly up.

Miss B. had become a severe nursing problem; her care was increasingly time-consuming and she required heavier dosages of narcotics for pain. She became quite demanding. Both the social worker and the physician frequently had to interpret her special needs to the nursing staff.

Unfortunately, Miss B. developed some paranoid-like ideas in relation to the nurses and her need for medication. Her depression mounted and several times she demanded that the social worker and a distant relative who maintained a close relationship with her, arrange for her transfer to a nursing home. Since no nursing home was available to meet her special needs, this request was handled by "delaying tactics" until she was again satisfied to await transfer.

**Adjustment** In an effort to help the patient face the physical limitations and prolonged nature of her illness, the worker encouraged her in her development of intellectual interests in contrast to her former preoccupation with active sports, and also to reveal her illness to her father and brother. Since she was still contributing to the support of the former, it was important that she begin to conserve her dwindling financial resources. And though she remained adamant, information concerning her condition was eventually released by her employer when her family became suspicious of her indefinite absence from the city.

As the time came for her transfer, the social worker, to help in her adjustment to the new hospital, immediately referred her to the social service department of the V.A. hospital.

Subsequent reports from her physi-

cian indicate that she now has settled into the long process of rehabilitation and is beginning to learn to live with her illness.

**Private Patient** Thus it may be seen that the social worker's services can be appropriately utilized in the care of the private patient as well as for clinic or service patient.

Frequently, the social worker can offer the attending physician information concerning the patient and of value in treatment of the patient. This is possible even without the social worker having any direct contact with the patient.

**Hospital Activities** Related to the social worker's primary role in the care of the patient are other areas in which she is frequently involved, including the teaching of medical students, interns, residents, and student nurses. Whether on rounds, in conferences, in the classroom, participation in special research projects, or in community activities related to health and welfare, the social worker is a member of the hospital team and can contribute her knowledge and experience to the welfare of the patients.

The extent to which social workers can assist in the care of the patient depends in large part on the degree to which the house staff and attending staff accept the value of the social worker's contribution.

But with the increased understanding which medicine has demonstrated concerning the relationship between social and emotional factors in disease, it follows that the social worker will be found with increasing frequency, not only in the larger hospitals, but also in the smaller community, non-teaching hospitals where patients expect and are entitled to the same high quality of medical care.



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# Missionary Doctor In Africa

**An account of service to neglected peoples by a missionary surgeon. His dedication, devotion and love of God and man, typifies the work of hundreds of American physicians who have elevated their profession in the attainment of its highest objectives.**

DONAL C. EDWARDS, M.D.

There is a tremendous satisfaction and feeling of accomplishments having served as a medical missionary in a foreign land. I can state this for a certainty. But with equal certainty I can assure you that there is a continuing demand for physicians to join the various religious missions in their Christian service to pagan peoples throughout the world.

The missionary doctor is needed both by his fellow missionaries and the natives among whom he lives and works.

The value of his medical contribution, of course, materially enhances his opportunity and importance in furthering the spiritual work of the missions.

**Opportunity** The missionary doctor is often a leader in the development of new missionary activities and is opening new fields of religious opportunity. He is a member of a team dedicated to bringing the Gospel into the hearts and lives of more of the peoples of the world.

Less than a year ago, I completed four years of missionary medical service in Nigeria. As you read this, I will be getting ready to go back, after having spent a year's furlough in the U. S. in a surgical residency.

As a doctor equipped with most of the tools, drugs and therapeutic information available to members of our profession, I was able to practice the art and science of medicine in such a way as to give satisfaction with God's help, and to enjoy a continuous source of opportunities for education, experience and research.

How does one get started in this work?

I don't believe there is any pat answer to this question which would fit all medical missionaries. It is something like the question repeatedly asked of all physicians: "Why did you decide to become a doctor?"

There are many factors influencing each individual. All I know for certain

is that my own interest in medical missions preceded my entering medical schools. This interest stemmed from a combination of two desires: to serve the Lord and to become a doctor.

After graduation from medical school in 1947, I took an internship and a surgical residency. Then came a final step of medical preparation. To gain a wider acquaintance with the needs and problems of tropical regions, my wife and I packed our belongings and headed for the Panama Canal Zone.

While practicing for a year in Panama, I kept in touch with the Sudan Interior Mission in New York City. It was my intention to serve in Nigeria, West Africa. The S. I. M. was active in this area.

Still interested in Africa, my wife and I applied to the S. I. M. upon our return to the United States. For the

next five weeks, along with other young couples who wished to become missionaries, we were instructed in the work to be done and advised of the problems we could expect to meet in the field.

During this period we were introduced to missionaries and in our talks with them, satisfied ourselves as to our compatibility and suitability for the mission work we had chosen. Previous to the five-week period, my wife and I had submitted a thesis setting forth our beliefs concerning the Christian religion (a statement of faith) which was studied by S. I. M. officials to aid in their determination of our spiritual qualifications as potential missionaries.

Finally, our health having been carefully checked, the day arrived when the Council of the Mission met to approve or disapprove each candidate.



Photo taken last year at Kaltungo Hospital just prior to the author's return to the U.S. from Africa. Dr. Edwards holds son Richard, 2, who was born in Nigeria as was month-old Greg, held by daughter Marcia, 7. Mrs. Edwards is seated next to oldest child, Stephen, who is 8 years old.

We were overjoyed when all in our group were accepted, an unusual event. Some in our group were nurses, some teachers, others ministers. I happened to be the only physician.

**Church Support** The next step for the S. I. M missionary is to seek the support of an individual church which will agree to sponsor the missionary and his family. (Various missions handle this important question of support in different ways.)

My wife and I and our young children returned to our church home in Boston, there receiving a promise of support from the mission-active Park Street Church. At that time, the Park Street Church had 125 missionaries in various areas.

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#### ABOUT THE AUTHOR

Born and raised in Minnesota, Dr. Edwards entered Harvard College in 1941 and the medical school in 1944. After graduating from Harvard Med in 1947, he took a rotating internship and a year's surgical residency at the Springfield Hospital, Springfield, Mass. After another year as a physician in the Panama Canal Zone, the author took a temporary position as a staff physician at the University of Massachusetts while awaiting permission of the draft board to embark on his missionary work. Sailing in 1951 for Nigeria, West Africa, with his wife and two small children, he completed four years and eight months missionary service including three years at the Bauchi Leprosarium and one year at Kaltungo Hospital before returning to the U.S. with his wife and four children last year. His furlough is being spent as a resident in surgery at the Broadus Hospital, Philippi, West Virginia. He and his family expect to return to Nigeria in September.

Church support, a nominal amount paid yearly, becomes the sole income for the missionary. It provides his travel expenses to and from the field, helps him with medical expenses for himself and his family if such a need arises.

Having obtained support, our departure from Nigeria, was delayed by the doctor draft. However, as an ordained medical missionary, I later became exempt from military service and was able to proceed to Nigeria with my wife and two children.

The problem of obtaining and packing clothing and equipment for four people to last four years is not the kind of a problem which occurs with any kind of regularity to anyone. This "advance planning, plus"—is, in itself, an experience. Yet, somehow we made it and all was ready. We were put aboard a freighter bound for Africa.

**Unknown Dangers** For myself, the thrill of setting out in a new work to a continent that had long occupied an important place in my thoughts, far overshadowed any hesitation or doubt—or worry as to possible dangers.

For my wife, however even though the time we spent together in the Canal Zone helped remove many uncertainties and fear of the tropics, the unknown dangers of strange diseases and animals was for her a strongly disturbing factor and was partly due to her natural concern for our children.

Yet, her Faith and trust in the Lord enabled her to face this problem. And by the time we boarded our ship, she was looking forward with me to our first glimpse of Africa.

Our ocean trip was both tranquil and to me, surprisingly quick. We passed between two hurricanes and enjoyed calm water all the way. Barely 17 days



Author's house at Leprosarium is typical of the S.I.M. missionary home.

from New York, we steamed into the harbor at Lagos, Nigeria—having made but one brief stop at Freetown, Sierra Leone.

**Hectic Days** The first few days in Lagos were hectic. Clearing our goods through customs, converting traveler's checks to British pounds, shilling and pence (and trying to memorize the value of each of the strange coins and bills), and getting through passport checks seemed an endless process. Following this came the necessary consular visits, securing driver's licenses and a host of other details all conducted in a strange city in southern Nigeria which was melting under blistering heat punctuated at sudden though brief intervals by torrential downpours.

One point was in our favor. We had no language problem; since Nigeria is administered by Great Britain, English is the main language of the southern part of the country. Our newness in this land was also eased considerably by the help of our mission representative who was there to guide us through the red tape.

**Nigeria** Nigeria is the largest British colonial territory. To compare it with something well-known for its bigness, Nigeria is nearly one-third larger than Texas. Located on the African Gold Coast, Nigeria is tucked into the corner of the prominent, right angle indentation of the western coast line of Africa. Nigeria's own coast line borders on the Gulf of Guinea in the South Atlantic Ocean. Stretching up from the coast 600 miles north to French West Africa, the area contains valuable tin and lead mines and exports such products as palm oil and kernels, cotton lint, cocoa, hides and skins, and rubber.

Its population has been estimated at 32 million (about four times that of Texas). The tin and lead mines have promoted the rapid development of an extensive railroad system. The Suez Canal located in the northeastern corner of Africa is approximately 1,000 miles northeast across Africa from Nigeria.

In Lagos, we were at once struck by the many strangenesses and contrasts encountered: from the modern stores



Author's snapshots show some of the problems seen by the missionary doctor in Nigeria. Above (left) is woman with 'lepro reaction' nodules on her back. Boy (upper right) 12, exhibits lepromatous leprosy. Left is frequent aftermath of a witch doctor's treatment. Child injured arm in a fall. Below is woman (discussed in story) with massive tumors who died while in the hospital. Other photo shows typical advanced ulcers of child's leg.



and buildings of British colonial style to the new and old homes and buildings of the nationals; the careful Western-style dress of some natives, to the pajama-like styles of the southern peoples, or the near nude "undress" of the less advanced. The hurrying crowds, thronging cars, taxis and buses had a familiarity, yet complete strangeness—for the crowds had dark skins, the motor vehicles were of strange styles and driven on the left hand side of the road. And as we went farther out of the city, we met more and more primitive conditions and people. The veneer was very thin indeed.

**Bauchi Plateau** Nigeria lies just above the equator and extends northward to the edges of the Sahara desert. In the coastal lands are the dense jungles of tropical Africa. But as one travels northward, gradually the jungle thins out giving place to Savannah lands, with tall Sudan grass, a few trees, and brush. This in turn gradually becomes sandy, bushy country with palms, camels, and the sub-Sahara heat and sandstorms.

Two huge rivers, one of these the mighty Niger, course down across Nigeria from both upper corners, meeting in the central south to divide the country, like a huge "Y," into three geographical and political divisions. Other large rivers are mainly the products of the seasons—rising with the rains, falling and disappearing (as do the small streams) in the dry season.

Above the center of the "Y" lies the famous, rocky, practically barren, Bauchi Plateau, a large area well over 3,000 feet in elevation. World-important tin and gypsum mining has been carried on here since the earliest development of the interior of Nigeria.

Here, in the relative coolness of the

Plateau, many missions have their field headquarters, including the S. I. M. And here is located our Missionary Nursing Home, Vacation Rest Camp, and school for missionary children.

**Train Trip** Within a few days we were ready to leave Lagos and take the train 600 miles into the interior, a two-day trip. Preparing for the long journey in our train compartment, we bought oranges and bananas three for a penny.

The train was slow, the route tortuous, the stops frequent and long. Our tickets were checked repeatedly by the conductor, distinguished from the ordinary Africans by his woolen overcoat and heavy, fur-lined earflap helmet—this in sweltering, tropical heat!

For us, the discomforts of the trip were all but forgotten in our excitement over seeing this new country and the noisy, busy African people encountered at every village stop.

At last came our stop. We had arrived at what was to be our home for the next six months while we studied *Hausa*, the language of the northern territories.

The train lurched to a halt and in a drenching downpour we and our bags were ushered off the train.

There was not a white face in sight. Unlike Lagos, here there was no English language; here there were no mission people to guide us. We felt utterly alone.

Fearful lest our baggage would be permanently carried off, we clung to bags and children, and dashed for the shelter of the station roof. Just at that moment, a "carryall" drove up and out popped three missionaries. One of our greeters was yellow with Atabrine. He proved to be one of our new doctors just

### Sudan Interior Mission

Since the Sudan Interior Mission was founded in 1893 by Rowland V. Bingham, it has grown to international scope with headquarters in New York, Toronto, Liverpool—and in South Africa, Australia, and New Zealand. S.I.M. has more than 1200 missionaries serving in eight African countries: Liberia, Nigeria, French West Africa (Niger Colony and Dahomey), Sudan, Ethiopia, Somalia (United Nations trusteeship), Eritrea, and in Aden, Arabia. Missionaries come from Canada, United States, Iceland, Scotland, England, Germany, Switzerland, South Africa, New Zealand, Australia — from nearly all the evangelical denominations—and are supported entirely by gifts from local churches and individuals.

Other missions similar to the S.I.M. include the China Inland Mission, the Africa Inland Mission, South African General Mission, North Africa Mission, West Indies Mission, Latin American Mission, Central American Mission, the Evangelical Alliance Mission, Far Eastern Gospel Mission, and others working in nearly every country in the world.

finishing language school and getting ready to go up to French West Africa to build a hospital. He and his two companions were a welcome sight.

**Mission Station** Quickly loading us into their vehicle, they drove us the mile back to the mission station where we met thirty-five young missionaries in various stages of learning the Hausa language. Soon we were installed in our mud-walled, grass-roofed house and the next day began our daily studies with the missionary teacher and *Hausa*

*Malams* (semi-educated, Hausa-speaking men who were our tutors).

Here began a great experience and education in becoming acquainted with the African people, their ways and their customs. We were introduced to the system of manual assistance each missionary is afforded. Both a blessing and bug-bear, the assistance came from "boys," young men employed in the house to carry water, prepare beds, cook, sweep floors, do laundry, look after the children, and who perform numerous other large and small duties freeing the missionary for his work.

**Hausa** The Hausa language, one of the easier African languages, is also one of the major languages of West and North Africa and has been used in trade and commerce for centuries. Written in arabic type characters, it was subsequently reformed by missionaries into a phonetic alphabet script. The Bible is translated into Hausa. Used by hundreds of missionaries for years, Hausa is essential for work among the northern Nigerians who, though they also share some 300 other tongues, speak it well or poorly. It becomes for the missionary the vehicle of his communication with the people.

The language has many interesting features, being a tonal language, and it helped us to understand our own Bibles better as we gradually learned the customs of the people, many of which were exactly the same as in Biblical times.

**Mission Work** Having been introduced to the Hausa language, and now able to speak and understand well enough to get along, we were sent another 600 miles northeast to Bauchi, there to build a leprosarium.

In three years we built our homes, huts for 400 patients, a hospital, ad-



ministration building, church, storehouse, schools, crafts building, and three buildings in which to house 100 children.

In addition we helped to organize and supervise leprosy clinics and segregation villages at eighteen mission stations up to three hundred miles away. Supplementing our leprosy work, we carried on an active surgical practice and supervised general medical dispensaries at these eighteen stations plus three others.

In our last year we were transferred yet farther east, to build (or start) a general hospital. This we did while carrying on the above-mentioned work. We were able to accomplish these many duties only with the aid of hard working missionary nurses, and such aids for travel as motorcycle, car, and airplane. My car travel alone took me over 50,000 miles in 56 months.

When we left Nigeria after four years and eight months (we stayed eight

months longer than the normal four-year term of our missionaries in order to get the hospital at Kaltungo underway before we left) we had a surgical building with operating room and ward space for 24 mat beds.

When we return to the Kaltungo Hospital after our year's furlough, we hope to enlarge it to include several wards, and provide increased services and equipment such as x-ray.

**Advanced Disease** The most impressive thing about the surgical problems in the African is the long standing and advanced nature of their diseases. Hernias and hydrocoele are almost all massive and difficult. Infections are invariably advanced, usually with large ulcers and osteomyelitis. Many times one is faced with salvaging life that has been badly threatened by witchcraft practices and unbelievable maltreatment. In some places fear of the white doctor has to be overcome. Fortunately, we did not encounter this often, finding

In the foreground is the proud, capable African "dispenser" whose dress befits his position of eminence among the natives. In the background can be seen the Bauchi Leprosarium Dispensary.







Outpatient department. Patients wait for medicine at missionary station dispensary in Katanga. Their need for medical attention is "indescribable."

most of our patients ready to do anything needed and undergo any surgery recommended. Without hesitation, they put themselves completely and trustingly in our hands.

Our work is basically evangelistic (bringing the message of the Gospel). Our medical work is a means to this end—to reach the hearts of the people. It also becomes a work of compassion because of the indescribable need. The missionary doctor is in the position of being the only one available to help.

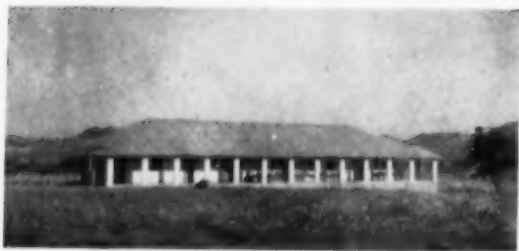
Our mission has many growing, healthy churches among former pagan and cannibal peoples and medical work has played and is playing a leading part in this effort.

The Christians are on the whole healthier, happier, wealthier, more generous, and more mature than their non-Christian compatriots. They are a delight to work with, and willingly volunteer in hospitals and dispensaries for ancillary medical services; many of them become nurses, midwives, technicians, dispensers, and so forth.

My surgical assistant was an English-speaking African trained in lab technology and further trained by me to assist at surgical operations.

In Nigeria and French West Africa, the Sudan Interior Mission has seven Leprosaria, two general hospitals, a renowned eye hospital, a hospital for missionaries (of our own and sister missions), numerous dispensaries, leprosy clinics and segregation villages, and of course great numbers of schools, churches, Bible schools, orphanages, printing presses, publications, and so forth.

There are more than 600 missionaries in these two countries from the S. I. M. alone, and over 1200 on all our African fields. In this number, we have approximately 16 doctors in the West African fields, and a large central pharmacy for the provision of drugs and supplies. Once a year these doctors meet together for a three- or four-day conference on leprosy and medical problems, and to present papers on medical subjects. Doctors of other mis-



Surgical building of  
Kaltungo Hospital.

Sudan Interior Mis-  
sion School for mis-  
sionary children.



sions are invited to participate and many do so.

Books and journals reach us from the United States and England and we are able to keep fairly well abreast of medical advances. We are hampered to some extent by lack of equipment and facilities; as these are provided through funds from friends and churches at home, we enlarge and extend our medical services.

Our own personal lives are made easier by adequate homes built of mud brick, with aluminum pan roofs, large windows, screens, cement floors. We use kerosene refrigerators, gasoline washing machines. Radios and lighting are operated by electricity provided by gasoline or diesel generators.

The Sudan Interior Mission also has a few small airplanes with experienced pilots for emergencies or long trips.

Certain foods and clothing are becoming more readily available within the country now than formerly.

Mail service brings us letters and parcels from home. Our recreation is varied. I enjoy hunting and thereby keep a ready supply of wild fowl, antelope, and small game on the table. Bigger hunts take us after hippopotamus or the large antelope. I have also managed to shoot leopard, hyena, and wild pig.

The problem of heat is met by light clothing, rest during the noon heat, and a gradual acclimatization which works wonders. We are bothered occasionally by snakes, constantly by insect pests, and take continuing precautions against malaria and amoebic and bacillary dysentery. Antimalarial drugs are not 100 percent effective; by judicious drug combinations, most missionaries remain free of clinical malaria most of the time.

**School Children** Our term in Nigeria was blessed with the addition of two boys to the family. They were born in our missionary nursing hospital under the best of conditions. Our second baby was born with malaria, but was quickly treated. Our two older children, a boy and a girl, became of school age on the field and attended the S. I. M. school for missionary children on the cool Bauchi Plateau. Beginning with a handful of pupils a few years ago, the school has increased in size to keep pace with our growing mission and increasing numbers of children.

My children had ninety classmates; there are over three hundred pre-school children in our West African fields who will be ready to enter school within the next three to four years. Nine months are spent at school, and the three "summer" months at home on the mission station.

Our children are away from us most of the time but they are nearby where we are able to visit them. Summers are times of grand reunion. The children renew acquaintance with their toys, the station, and their African friends. But before summer is over, they are anxious to get back to school with their chums, fine teachers, and the many school activities and sports. The children's real enjoyment of school is a help to the parents when it comes time to separate from them.

**Spiritual, Medical** As you can well imagine, the combination of spiritual and medical work is most satisfying and interesting, reaching out as it does to the two most important human needs—spiritual and physical.

The worth of both phases of our work is pointed out to us over and over again in the profuse gratitude of the healed

patient, and the serene joy of the converted person facing ordeal and even death.

This latter experience can be illustrated by the case of a woman brought to us with a huge ovarian tumor. Too run-down for immediate surgery, she spent two months with us as we attempted to build up her health prior to surgery.

At the same time we had an opportunity to tell her repeatedly of the Gospel of Salvation in Christ Jesus, which she accepted with her heart (this, in spite of the fact that she belonged to one of the more advanced religions of Africa).

Surgery proved her tumor to be malignant and advanced; she died five days later. As her life left her, she expressed her joy in her new found faith and her certainty that she was going to be with Jesus.

After her death, her husband helped us give her a Christian burial; he told us with obvious conviction that he had *never* seen anyone with such peace and joy as she had, even in the face of death.

Such experiences are not rare and are more than compensation for being far from home, among strangers, poor in material things; these experiences afford us positive evidence of the value of our medical missionary work.

As you know, opportunities for Christian medical service are not limited to foreign countries. Mission work using doctors is carried on in many parts of this country, including work among American Indians, backward and rural mountain district, and isolated northern regions. Also, Government positions are open in which the Christian doctor can find opportunities for Christian service both within the position and dur-

ing off duty hours (as we did in the Canal Zone).

Foreign mission opportunities are many, both within the Western Hemisphere, and in the Africo-Asian countries. Government medical services in the majority of these countries are either non-existent, or too limited to meet the tremendous needs of the people.

Many different missions of various denominations are working in these countries. Most have medical services in need of doctors, nurses and dentists.

The S. I. M. needs doctors, both specialists and general practioners, in seven African countries. Many missions will accept a doctor for short periods of service of one or two years to relieve their own doctors on furlough who may not have replacements. Some doctors go for a single term of from three to five years.

The doctor who wants to make medi-

cal missions his lifetime career will find himself in a joyful, useful work which will repay him many times over in satisfaction and Christian experience and fellowship while permitting him to carry on his own specialty, completely and with no competition.

Of great help to the medical missionary is the new "Brother-Physician" plan of the Christian Medical Society. In this plan, each doctor on the field has a brother physician at home who corresponds with him, helps with information, books, drugs, and lines up educational opportunities for the furloughing doctor. Working together, the Christian missionary doctor and his brother physician extend a long, strong hand of skill and love to the earth's neglected peoples.

To be a part of this aid, to serve and honor Him on this earth, is the motivation, inspiration and strength of the missionary physician.



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# Investing For The Successful Physician

Prepared especially for Medical Times by C. Norman Stabler,  
market analyst of "The New York Herald Tribune."

## ARE FAVORITES A BUY?

Every investor is acquainted with the stellar advances of the so called blue chips of the stock market—the shares of our biggest and best industrial corporations that have been well seasoned for years.

In the early days of the long bull market one could have bought a few shares of any one of the leaders and sat back to see his assets increase many times over. All that it was necessary to do was to pick the best one, and not take a chance on newer untried securities.

Institutional investors generally followed such a course. Consequently their commitments were watched closely by individual investors. Trust managers of those institutions enjoyed the reputation of being experts, and those individuals who followed them were richly rewarded. A tabulation, prepared semi-annually by the firm of Vickers Asso-

ciates, Inc., showing the fifty stocks most popular with the institutions, was carefully followed in the financial district,

for a clue as to where the wise money was going.

It still has a wide following, as do other compilations of a somewhat similar nature. Individuals got in the habit of saying, "If it suits those who invest the funds of universities, pension funds, trust funds and mutual funds, it suits me."



C. Norman Stabler

Now the bull market is old, and along comes one of Wall Street's most astute analysts with the advice, "If you want to make big capital gains in the coming decade, steer away from the favorite fifty and find a new key to market profits."

He is Gerald M. Loeb, a senior partner of E. F. Hutton & Co. He gave his advice to a group of students who spent a part of the summer in Wall Street.

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## HOW TO INVEST

The nation is becoming more investment conscious and those who are trying to store away a few nest eggs are continually puzzling over the course they should follow. Those whom they approach for advice have as many nostrums as there are for the common cold.

The trouble is there is a lack of uniformity in the respective financial positions of investors. Magic words for one will not necessarily apply to the problems of another. Everything would be fine if a list of hard and fast rules could be propounded. Then it would be a simple case of following the rules and eventually retiring at a youthful age to live the balance of one's life enjoying the largess provided by earlier wisdom. But there is no single cure for financial problems any more than there is for a cold.

The usual form of advice on how to invest starts with a reminder that a man who is head of a family must take into account his responsibility and carry adequate insurance. Here a question arises as to what is adequate.

Life insurance salesmen have the reputation of being glib talkers, well fortified with arguments. If their advice were followed completely, the chances are most of us would have little left over after paying the premiums and meeting the rising cost of living.

As an investment, the return on insurance is small, and as a policy is expressed in dollar terms, as are bonds and mortgages, it provides an inadequate offset to the ravages of inflation and the long-term depreciation of currency. Insurance is essential, but it is easy to become over sold and over insured.

Then the advice turns to the advantages of owning one's home and having a few government bonds in the strong box, or a savings account. The former provides a partial offset to inflation as, generally speaking, real estate prices tend to increase as the purchasing power of the dollar decreases. Obviously, there are exceptions, as there are in any equity investment, including stocks or a partnership in an individual business.

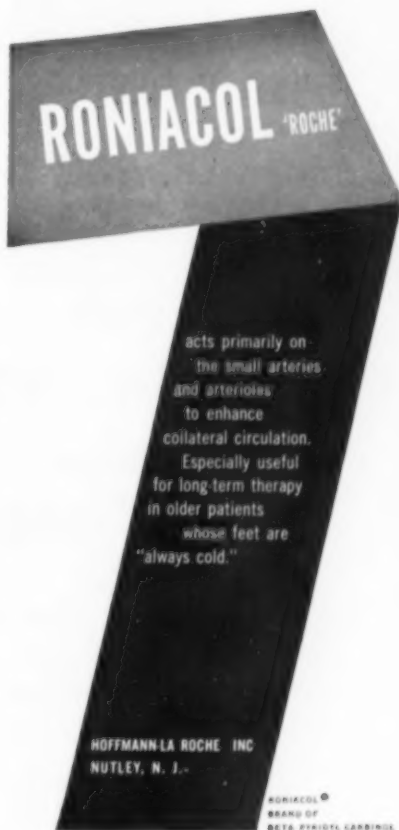
The advantage of a savings account is that the money is readily available, in the event of a crisis. The money is also available to the holder of government bonds, but he doesn't always get par if money is tight and interest rates are in an upswing.

Those to whom the advice is given frequently reply, "Yes, I want adequate insurance, a home, a few government bonds and a savings account, but if I buy all this and try to keep even with the butcher, the baker and the candlestick maker, there is no longer a problem about investing my balance, because there isn't any balance."

That is especially true of younger men and women, who have just started out and have a long way to go before reaching their years of greatest earning power.

It boils down to a case of personal analysis and then personal selectivity. Personal analysis consists of determining one's own earnings, objectives, prospects, responsibilities, age and temperament. The last named is important for the reason there are bound to be faulty calculations among the first, and when something doesn't materialize the way it was planned, one has to consider whether he will become a worrier, a bull in the china shop, a gambler or a good general.

for  
prolonged  
vasodilation  
in chronic  
circulatory  
disorders





## UNITED FUNDS CANADA LTD.

A Mutual Fund  
whose primary investment  
objective is possible  
long-term

### Growth of Capital

through investment in  
companies deriving income  
largely from Canada.

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New York Stock Exchange  
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M 9

Personal selectivity of one's investment has as many ramifications. There are a few rules to follow. Generally speaking, if the individual has a reasonable prospect of retaining his earning power for some years to come, he should concentrate on the so-called growth securities. These are stocks of well established companies that have displayed a long term uptrend in earnings but which retain the bulk of such earnings to finance their own expansion and research. Dividend yields on such stocks usually are low, and they normally sell at a high price/earnings ratio. Compared with the great bulk of other stocks, they look high.

If the individual is in a position where he has been prudent in the matter of his family responsibilities and is confident he will be able to maintain his program over the next few years, he is justified in taking greater risks. He need not confine the investing of his surplus to the so-called good common stocks. He can select among those that are less well known, in which the risk factor is high and there is a possibility of a complete loss somewhere along the line.

We know of one Stock Exchange member who, in the depths of the depression of the early thirties, followed a practice of buying any stock listed on the Big Board that was selling for less than a dollar a share. Presumably some went down and out, but untold profits eventually developed on a large number.

For many investors, especially those in the higher brackets, tax exempt securities offer a protection against prevailing high income tax rates. Such securities are not risk-free, as there have been cases of defaults, but generally speaking their rating is good.

MEDICAL TIMES



before



after



in skin conditions like this...and many others

more evidence for

## NEW Vioform<sup>®</sup>-Hydrocortisone Cream

Case was seen on April 11 for a vesicopustular eruption of left thumb of five weeks' duration. Diagnosis was hand eczema without evidence of fungus infection.

VIOFORM-HYDROCORTISONE CREAM, phyllin wet compresses and superficial X-ray permitted clearing in 2 weeks. No record of relapse.

Nelson, M. Personal communication.

**skin diseases  
of days,  
weeks or even years  
often respond  
dramatically to**

## **NEW Vioform-Hydrocortisone Cream**

anti-inflammatory   antipruritic   antibacterial   antifungal

Supplied:

**VIOFORM-HYDROCORTISONE Cream**, contains  
iodochlorhydroxyquin 3% and hydrocortisone  
(free alcohol) 1% in a water-washable base.

Tubes, 5 Gm.   Tubes, 20 Gm.

**VIOFORM®** (iodochlorhydroxyquin CIBA)

Also Available:

VIOFORM	Cream	Ointment	Powder
	Insufflate	Inserts	
ENTERO-VIOFORM®	Tablets		

fatigue



memory lapses



muscular pain



depression



## for middle-age slowdown

Plestran is indicated as an aid in restoration of vigor in middle-aged or elderly patients who complain of chronic fatigue... reduced vitality... low physical reserve... impaired work capacity... depression... muscular aches and pains... or cold intolerance. Such "signs of aging," far from being due to physiologic disturbances, may often result from endocrine imbalance, especially gonadal and thyroid dysfunction.<sup>1-4</sup> Plestran provides ethinyl estradiol (0.005 mg.); methyltestosterone (2.5 mg.); and Proloid\*\* (¼ gr.)—hormones which help to correct endocrine imbalance and often halt or reverse involutional and degenerative changes.<sup>1-4</sup>

*Plestran restores work capacity and a sense of well-being, usually within 7 to 10 days. It improves nitrogen balance, leads to better muscle tone and vigor, enhances mental alertness,*

\*Purified thyroid globulin

helps to correct osteoporosis, senile skin and hair texture changes and relieves muscular pain.

*The anabolic and tonic effects of the hormones in Plestran appear to be enhanced by combination so that small dosages are very effective. Combination also overcomes some of the disadvantages of therapy with a single sex hormone, such as virilization, feminization or withdrawal bleeding.<sup>5</sup>*

**Dosage:** Usually one tablet daily; occasional patients may require two tablets daily, depending on clinical response.

Supplied in bottles of 100 and 500.

**References:** 1. McGavack, T. H.: *Geriatrics* 5:151 (May-June) 1950. 2. Masters, W. H.: *Obst. & Gynec.* 8:61 (July) 1956. 3. Kimble, S. T., and Stieglitz, E. J.: *Geriatrics* 7:20 (Jan.-Feb.) 1952. 4. Kountz, W. B., and Chieffi, M.: *Geriatrics* 2:344 (Nov.-Dec.) 1947. 5. Birnberg, C. H., and Kurzkro, R.: *J. Am. Geriatrics Soc.* 3:656 (Sept.) 1955.

# PLESTRAN

TRADEMARK

*a metabolic regulator*

**WARNER-CHILCOTT**

100 YEARS OF SERVICE TO THE MEDICAL PROFESSION

In view of high interest rates many of these obligations are now selling well below par. The assumption is they will be paid off at par at maturity, and in the meantime the interest is exempt from taxation.

This is a brief summary of the advice one usually hears when he asks how he should invest. There is a long list of other rules. These include such things as limiting the portion of one's funds that are placed in more speculative ventures, diversify sufficiently so that not too much of your capital is tied up in

one company or one industry, don't overtrade — remember, the market will always be there — avoid thin margins and don't borrow at all to buy if you are of a nervous temperament, buy only those stocks you will like even if the price moves against you temporarily, if you become convinced you have been guilty of poor judgment take your loss without delay, remember the tax rate is lower on capital gains than on dividend income and that you also get better tax treatment on long-term gains and, don't try for the final eighth.

### THE 25-YEAR RECORD

No one of us, twenty-five years ago, could have foreseen what has happened in the intervening period. By the same token, the next twenty-five years are as hidden from our view. There is no Oracle of Delphi, and no crystal ball that will serve our purpose.

We know that we, as a nation, and as a world, faced a series of crises. Presumably we have just as many ahead of us, and if we keep trying we will doubt-

less see them through, even though we acquire a few scars on the way.

Look at the opposite chart, prepared by Vance, Sanders & Co., Boston, distributors of Massachusetts Investors Trust, Massachusetts Investors Growth Stock Fund, Boston Fund, Century Shares Trust and Canada General Fund.

The line from left to right, somewhat reminiscent of the Swiss Alps, represents our national production.

### TAX LOOPHOLE PLUGGED

A favorite stunt to get a capital gain, which is taxable at a top rate of 25 per cent as against regular income which is

taxable at rates running up to 91 per cent, has been to organize a "quickie" corporation. The accounting firm of Seidman & Seidman reports that a developer of real estate, for instance, would operate through a new corporation. The company would build houses and then liquidate or "collapse." If the finished development was worth more than cost, the appreciation was a capital gain, whereas realizing the value by renting the property to tenants would

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The information set forth herein was obtained from sources which we believe reliable, but we do not guarantee its accuracy. Neither the information nor any opinion expressed constitutes either a recommendation or a solicitation by the publisher or the authors for the purchase or sales of any securities or commodities.

1932

## T W E N T Y - F I V E   E V E N T F U L   Y E A R S

1957

DEPRESSION

ROOSEVELT ELECTED

BOND PRICES

THE "NEW DEAL"

BANK HOLIDAY

GOLD STANDARD  
ABANDONED"PUMP PRIMING":  
WPA, AAA, CCC

DEFICIT SPENDING

UNREST IN EUROPE

GERMAN-JAPANESE  
"AXIS"

SIT-DOWN STRIKES

SHARP RECESSION

HITLER TAKES AUSTRIA

"PLANNED" INFLATION

MUNICH

HITLER-STALIN PACT

WORLD WAR:  
POLAND INVASEDFRANCE SURRENDERS  
DUNKIRKROOSEVELT BREAKS  
3d TERM PRECEDENTHITLER INVASES  
RUSSIA

LEND LEASE

PEARL HARBOR

ALLIES ON DEFENSIVE

PRICE CONTROLS—  
WAGE STABILIZATIONAXIS BEGINS TO  
CRUMBLEPEAK WAR  
PRODUCTION

VICTORY IN SIGHT

STOCK PRICES

ROOSEVELT 4th TERM

TRUMAN PRESIDENT

GERMANY SURRENDERS

ATOMIC BOMB—  
WAR ENDS

COLD WAR

MARSHALL PLAN AID

WAGES-PRICES SOAR

BERLIN AIR LIFT

\$8 BILLION FEDERAL  
TAX REDUCTIONSTRONGER INFLATION-  
ARY TRENDKOREA "POLICE  
ACTION"ARMS PRODUCTION  
RESUMEDNEW EXCESS PROFITS  
TAXFRB DROPS SUPPORT  
FOR GOV'T BONDS

CEASE-FIRE IN KOREA

EISENHOWER WINS

STALIN DIES

\$7 BILLION INCOME  
TAX REDUCTIONGOV'T MOVE TO  
CONTROL INFLATION

PROSPERITY SOARS

EISENHOWER  
RE-ELECTED

MIDDLE EAST CRISIS

PURCHASING POWER

INTEREST RATES RISE

TRAGEDY IN HUNGARY

1932

1937

1942

1947

1952

1957

create ordinary income.

This gimmick was plugged in the tax law by a provision that says that if a company is set up, or used, to pull the scheme, the gain on liquidation will be taxed as regular income, not capital gain. A case has just been decided by the courts that shows the teeth in this loophole closing provision.

Raymond Burge constructed and rented out apartment houses. He organized a corporation to put up a development. The company borrowed from F.H.A. Not all the borrowed money was needed. The unused money was applied by the company to redeem some of his stock at a gain to him of \$45,000. In

addition, he sold some of his stock at a profit of \$40,000. All this took place within two years after the company was organized.

Mr. Burge reported the \$85,000 profits as capital gain. The government treated it as regular income. He appealed. The court held the government was right.

He argued that the company was not a temporary but a permanent affair, and that he did not originally plan to bail out so quickly. He also contended that the law applied only when the property itself is distributed to the stockholders, and not cash. The court ruled that the law is broad enough to catch transactions of this sort.

#### EXAGGERATED SPECTRES

Prices of public utility shares had a relatively poor summer. Selling developed because investors feared future impact of high interest rates and inflation would work against these companies.

These fears are not shared by The Value Line Investment Survey, published by Arnold Bernhard & Co., which observes that, "spectres, uncertain at best, can be exaggerated." Its observation is the more noteworthy because this firm of investment advisers has been bearish on most of the stock market for a matter of years.

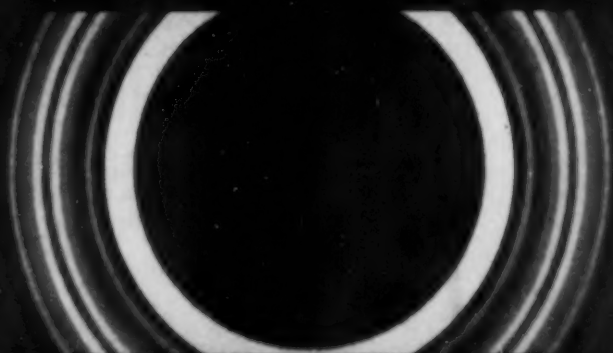
It states that:

● Utilities are likely to be able to keep pace with inflation—through excellent management, improved equipment and resulting operating economies. In the postwar years they have done so consistently. In the long run, moreover, inflation boosts the companies' rate bases.

● The average utility can take rising money rates in its stride—net interest expense of public utilities is still less than 4% of gross revenue, the same proportion as in 1952. Rates for new money tend to fluctuate to extremes. At present relatively high, the average of future rates is likely to be somewhat lower.

The survey further concludes, "The utilities do not carry the same degree of risk as most stocks. Their dividends are safe, their earnings almost recession-proof. They have not been bid up to prices out of line with historic norms of valuation. In a potentially dangerous market for capital gains seekers, the speculative frenzy has passed them by. At present prices, the conservative long-term investor can have more confidence in utilities than in almost any other equity group."

**PARKE-DAVIS ANNOUNCES  
A MAJOR ADVANCE  
IN FEMALE HORMONE THERAPY**



▲ The x-ray diffraction pattern of NORLUTIN distinguishes its crystal structure from that of other progestogens.

**N<sup>♀</sup>RLUTIN<sup>TM</sup>**  
(norethindrone, Parke-Davis)

**oral progestational agent  
with  
unequalled potency  
and  
unsurpassed efficacy**

# UNEQUALLED POTENCY

for oral progestational therapy



NORLUTIN  
(17-alpha-ethinyl-19-  
nortestosterone)

NORLUTIN is an example of "...increased biological activity of a steroid when the methyl group at carbon 10 is replaced with hydrogen."<sup>1</sup>

# N<sub>♀</sub>RLUTIN

**INDICATIONS FOR NORLUTIN:** amenorrhea, menstrual irregularity, functional uterine bleeding, infertility, habitual abortion, threatened abortion, premenstrual tension, dysmenorrhea.

## RELATIVE POTENCIES OF ETHISTERONE AND NORLUTIN IN HUMANS<sup>2,3</sup>



**REFERENCES:** (1) Hertz, R., Tullner, W., & Raffelt, E.: *Endocrinology* 54:228, 1954. (2) Greenblatt, R. B.: *J. Clin. Endocrinol.* 16:809, 1956. (3) Hertz, R., Waite, J. H., & Thomas, L. B.: *Proc. Soc. Exper. Biol. & Med.* 91:419, 1956. (4) Tyler, E. T.: *J. Clin. Endocrinol.* 15:891, 1955. (5) Greenblatt, R. B., & Clark, S. L.: *M. Clin. North America*, Philadelphia, W. B. Saunders Co. (Mar.) 1957, p. 587.

**PACKAGING:** 5 mg. scored tablets (C. T. No. 882), bottles of 30.



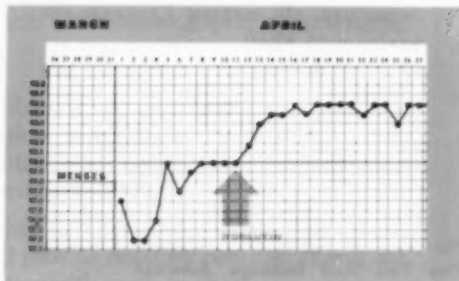
# UNSURPASSED EFFICACY

in disorders of menstruation and pregnancy



**NORLUTIN: Progestational Effect on Endometrium** "...10 mg. [NORLUTIN] given twice daily represents a reproducibly effective dose in women for the production of marked progestational changes in the endometrium."<sup>3</sup>

Presecretory to secretory endometrium after 5 days treatment.



**NORLUTIN: Thermogenic Effect** "This preparation was found to have a marked thermogenic, and other physiologic effects in comparatively small dosage."<sup>4</sup>



**NORLUTIN: Abolition of Arborization in Cervical Mucus** NORLUTIN "...inhibits the fern leaf pattern in cervical mucus."<sup>5</sup>

1. Fern leaf pattern. 2. Arborization completely abolished by NORLUTIN.

**NORLUTIN: Induction of Withdrawal Bleeding** "As little as 50 mg. of [NORLUTIN] administered in divided doses over a five-day period was sufficient to induce withdrawal bleeding."<sup>2</sup>



PARKE, DAVIS & COMPANY · DETROIT 32, MICHIGAN

## COMPARATIVE COST OF CAPITAL

The demand for capital—to start a company, to enlarge a company, to add a new building or more modern equipment—is not peculiar to the United States. Every country is experiencing the same pinch.

In almost all cases, a company that has a sufficiently good credit rating with the investing public, prefers to sell new capital stock rather than to go into debt, through issuing new bonds. Not all can do it; also it may prove to be more expensive.

The money cost of raising money is a problem that affect all, and especially the investment bankers, who act as a go-between, negotiating with the borrowing corporation and the investing public.

The New York Stock Exchange,

anxious to show the advantages of having securities listed on its board, conducted an analysis of new security issues in 1955 and another covering 1956. It came to the conclusion that the cost of raising capital through common stock was significantly lower for companies listed on the Big Board than for other companies.

The 1956 analysis covered 104 common stock issues, totaling nearly \$800,000,000. Its figures indicate the cost for listed companies averaged 56 per cent lower for listed than for unlisted companies. In dollar terms, for every \$100 of new capital received from common stock sales, non-New York Stock Exchange companies paid \$5.97 to underwriters. In contrast Exchange companies paid \$2.60.

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### Guide For Investors

Based on recommendations of the Securities and Exchange Commission in cooperation with the New York Stock Exchange, American Stock Exchange, National Association of Securities Dealers and others.

1. Think before buying, guard against all high pressure sales.
2. Beware of promises of quick spectacular price rises.
3. Be sure you understand the risk of loss as well as prospect of gain.
4. Get the facts—do not buy on tips or rumors.
5. Give at least as much thought when purchasing securities as you would when acquiring any valuable property.
6. Be skeptical of securities offered on the telephone from any firm or salesman you do not know.
7. Request the person offering securities over the phone to mail you written information about the corporation, its operations, net profit, management, financial position and future prospects.

DEAR DOCTOR:

# Here's why no other kind of laxative is gentler, yet so fast acting

## **SAL HEPATICA® is gentle**

It creates a gentle moist bulk, drawing water into the intestine by osmotic action, thus exerting a soft, gentle pressure initiating the proper intestinal response—the very mechanism which produces normal elimination.

It contains no harsh chemical irritants to stimulate intestinal overactivity—the condition that often causes griping and cramping.

## **SAL HEPATICA is fast acting**

SAL HEPATICA gives prompt relief from constipation. When taken one-half hour before breakfast, your patients will get relief usually within the hour.

Or when taken one-half hour before supper, it will provide relief by bedtime. It will not interfere with work or sleep.

SAL HEPATICA, because it is antacid, helps relieve the hyperacidity which so frequently accompanies constipation—and its antacid action speeds it into the intestine.



APERIENT



LAXATIVE



CATHARTIC

## **SAL HEPATICA has a sound pharmacologic basis.**

**It is both effervescent and antacid.**

"The emptying time of the stomach is actually shortened by reducing the gastric acidity."<sup>1</sup>

"Effervescent mixtures decrease the emptying time of the stomach."<sup>2</sup>

1. The Physiological Basis of Medical Practice, 1945, p. 486.

2. New England J. Med. 235:80 (July 18) 1946.

Bristol-Myers Co. • 19 West 50 Street • New York 20, N. Y.

## Investment Services

**T. ROWE PRICE  
GROWTH STOCK FUND, INC.**  
Dept. P, 10 Light St., Baltimore 2, Md.

**OBJECTIVE:** Long term growth of principal and income.

**OFFERING PRICE:** Net asset value per share. There is no sales load or commission.

**Write for Prospectus**

Upon request you may have a booklet that gives a comprehensive digest of financial information relative to all leading stocks listed on the New York Stock Exchange, American Stock Exchange and many that are traded in the over-the-counter market issues. Just write a card or note for your free copy to Cosgrove, Whitehead & Gammack, members of the New York Stock Exchange and American Stock Exchange and Registered Investment Advertisers, 44 Wall Street, New York 5, New York.

### CURRENT READING IN FINANCE

Recent analyses on various companies and industries issued by financial firms include the following:

SUBJECT	FIRM	NEW YORK ADDRESS
Budd Co.	Cady, Roberts & Co.	488 Madison Ave.
United Shoe Machinery Corp.	Herzfeld & Stern	30 Broad St.
Canada's economy	Thomson & McKinnon	11 Wall St.
American Marietta Co.	Eastman Dillon, Union Securities & Co.	15 Broad St.
Sperry Rand Corp.	Joseph Walker & Sons	120 Broadway
Madison Gas & Electric Co.	Golkin & Co.	25 Broad St.
Great Western Financial Corp.	John H. Kaplan & Co.	120 Broadway
National Supply Co.	Green, Ellis & Anderson	61 Broadway
Fibreboard Paper Products Corp.	Shearson, Hammill & Co.	115 Broadway
Stone & Webster	Francis I. duPont & Co.	1 Wall St.
Jessop Steel Co.	Sutro Bros. & Co.	120 Broadway
Jack & Heinz, Inc.	H. Hentz & Co.	72 Wall St.
Creole Petroleum Corp.	Harris, Upham & Co.	120 Broadway
P. R. Mallory & Co.	Fahnestock & Co.	65 Broadway
American Natural Gas Co.	Hayden, Stone & Co.	25 Broad St.
United States Steel Corp.	Dean Witter & Co.	14 Wall St.
Bell & Howell	Bache & Co.	26 Wall St.
Columbia Broadcasting System	Amott, Baker & Co.	150 Broadway
Gulf States Utilities	Orvis Brothers & Co.	14 Wall St.
Poor & Co.	Paine, Webber, Jackson & Curtis	25 Broad St.
American Sugar Refining Co.	Reynolds & Co.	120 Broadway
American Seal-Kap Co.	Burnham & Co.	15 Broad St.
Morgan Engineering Co.	Blair & Co.	20 Broad St.

NOW FOR THE FIRST TIME

**SELECTIVELY**

*"...corn oil is indeed effective in most cases of hypercholesterolemia..." J.A.M.A. 166:1486 (Apr. 20) 1957.*

**FORMULATED**

*"...atherosclerosis... may be most effectively treated by the synergistic combination of essential fatty acids and pyridoxine."<sup>3</sup>*

TO REDUCE SERUM-CHOLESTEROL  
**ATHEROXIN**

a combination of MAYDOL, Gray's brand of Oleum Maydis (refined corn-oil) and Pyridoxine Hydrochloride in a deliciously flavored base for oral administration

*Atheroxin is indicated to reduce  
serum-cholesterol in:*

coronary artery disease  
atherosclerosis  
hypertensive diathesis

Atheroxin combines the demonstrated cholesterol-lowering factors of corn oil—"...in a class by itself yielding the lowest serum-cholesterol value of all the diets."<sup>3</sup>—with pyridoxine hydrochloride, a singularly effective agent for the utilization of essential fatty acids.

PLEASANTLY FLAVORED

Bottles of 24 fluid ounces.

Dosage: Two tablespoonfuls t.i.d.

Bibliography: 1. "Fats, Cholesterol and Atherosclerosis, An Editorial," J.A.M.A. 163:1486 (Apr. 20) 1957.  
2. Rathmann, D. M.: Vegetable Oils in Nutrition With Special Reference to Unsaturated Fatty Acids, New York, Corn Products Refining Co., 1957, p. 41. 3. Anderson, J. T., et al.: J. Nutrition 64:421 (July 10) 1957.

Further information and literature is available from the Medical Director

 **GRAY** PHARMACEUTICAL CO., INC., NEWTON 58, MASS. | PRODUCTS OF RESEARCH FOR MEDICINE

## THAT'S A LOT OF OIL

The free world petroleum industry managed to set new production and investment records in 1956, despite the Suez Oil crisis, according to the Chase Manhattan Bank's annual analysis of the industry.

Total consumption of free world petroleum products amounted to 15,600,000 barrels daily last year, an increase of 7.4 per cent over 1955. Crude oil production averaged 14,800,000 barrels daily, a rise of 7.9 per cent over 1955, the bank study said.

At year-end, the Chase analysis reported, free world reserves stood at a record 200 billion barrels—"sufficient to meet demand for many years."

Capital investments, exploration and research outlays in the U. S. and abroad amounted to \$9,700,000,000, a 17 per cent rise over the previous year. Close to 63 per cent of the total went for

properties and plants in the United States.

The Chase reported gross investment in fixed assets approximated \$70 billion at the end of the year, with 62 per cent located in the U. S.

American Oil company dividend payments rose to new highs last year, but the relative gain abroad over 1955 was greater, the bank said.

It said the 33 major firms covered by the study reported a combined net income of \$3,003,000,000, against \$2,668,000,000 in 1955, a gain of 12.6 per cent. Cash dividends amounting to \$1,268,000,000, or 42.2 per cent of earnings were paid to stockholders.

Of the record reserves, 70 per cent lie in the Middle East, 15 per cent in the U. S., seven per cent in Venezuela and eight per cent in all other countries, the Chase noted.

## HALF YEAR CORPORATE EARNINGS

Corporate earnings in the first half of this year were about 6 per cent better than in the corresponding period of last year, according to a study by the First National City Bank. Reports received from 741 companies showed combined net income after taxes of \$6,200,000,000. About three out of five corporations in its survey scored gains and the bank observes that "the good showing reflects high levels of production, distribution, employment, national income and other over-all measures of economic activity."

In manufacturing, a majority of the industry groups showed increases in both sales and net income. In some

lines, however, the rise in operating expenses and taxes absorbed practically all of the increased revenue from sales. A few lines experienced fairly substantial declines in net earnings as a result of the rise in their costs, often combined with a lag in sales.

In fields other than manufacturing, there were half-year increases in net income by the wholesale and retail trade, and the service and amusement industry groups. Continued growth was achieved by the electric, gas, and telephone utilities.

The summary on page 116a shows by major industry groups the changes for the quarter and half year.

## INTRODUCING *an important advance in menopausal therapy*

*For  
two-dimensional  
treatment  
of  
the*



*menopause*

"Milprem"—Miltown® + Conjugated Estrogens (equine)—combines for complementary action a *proven* tranquilizer with a *proven* natural estrogen for simultaneous control of *both* manifestations of the menopause—the psychologic and physiologic. "Milprem" *restores emotional and hormonal balance* in menopausal distress.

"Milprem" represents, therefore, rational and comprehensive menopausal therapy. With *one* prescription you can now safely manage the *whole* menopausal syndrome. Samples and literature on request.

Supplied: Bottles of 60 tablets.

Each tablet contains:

MILTOWN® (meprobamate, Wallace)	400 mg.
2-methyl-2-m-propyl-1,3-propanediol dicarboxylate,	
U. S. Patent No. 2,724,720.	
Conjugated Estrogens (equine)	0.4 mg.
Licensed under U. S. Patent No. 2,429,398.	

Dosage: One tablet t.i.d. in 21-day courses with one week rest periods.

Should be adjusted to individual requirements.

**"Milprem"** MILTOWN® +  
CONJUGATED  
ESTROGENS  
(EQUINE)

CMF 5433-57



WALLACE LABORATORIES, New Brunswick, N. J.



# Net Income

## OF LEADING CORPORATIONS

FOR THE SECOND QUARTER AND FIRST HALF YEAR (In Thousands of Dollars)

NO. OF COS.	INDUSTRIAL GROUPS	REPORTED NET INCOME SECOND QUARTER			REPORTED NET INCOME HALF YEAR		
		1956	1957	PER CENT CHANGE	1956	1957	PERCENT CHANGE
44	Food products and beverages	\$ 82,440	\$ 86,186	+ 5	\$ 149,784	\$ 162,896	+ 9
9	Tobacco products	28,990	33,709	+16	53,515	60,039	+12
20	Textiles and apparel	11,938	8,639	-28	29,814	23,300	-22
28	Paper and allied products	64,787	51,028	-21	128,194	104,858	-18
31	Chemical products	186,299	188,392	+ 1	374,656	372,735	- 1
19	Drugs, soap, cosmetics	49,657	53,703	+ 8	102,620	116,291	+13
34	Petroleum producing and refining	607,076	714,372	+18	1,259,232	1,486,706	+18
48	Cement, glass, and stone	107,400	98,783	- 8	193,065	173,515	-10
35	Iron and steel	300,450	292,551	- 3	581,077	595,025	+ 2
29	Electrical equipment, radio and television	79,699	85,063	+ 7	164,973	179,185	+ 9
49	Machinery	85,598	87,626	+ 1	157,965	170,978	+ 8
93	Other metal products	210,203	172,165	-18	409,899	341,037	-17
35	Automobiles and parts	322,767	375,737	+16	729,618	826,909	+13
28	Other transportation equipment	53,571	58,534	+ 9	99,010	111,416	+13
44	Miscellaneous manufacturing	59,852	62,427	+ 4	109,628	115,183	+ 5
546	TOTAL MANUFACTURING	2,251,727	2,368,915	+ 5	4,543,050	4,840,072	+ 7
19	Mining and quarrying	42,764	37,942	-11	77,939	74,474	- 4
29	Trade (retail and who'sale)	25,309	27,866	+10	48,183	55,304	+15
21	Service and amusement industries	13,581	15,573	+15	26,532	30,245	+14
54	Railroads	210,581	154,903	-26	367,135	319,583	-13
68	Electric power, gas, etc.	163,583	172,737	+ 6	376,100	395,081	+ 5
4	Telephone and telegraph	195,387	217,560	+11	381,467	435,624	+14
741	TOTAL	\$2,932,932	\$2,995,496	+ 3	\$5,820,406	\$6,150,383	+ 6



# 2 NEW CONVENIENT ORAL FORMS

## ACHROMYCIN\* V

TETRACYCLINE BUFFERED WITH PHOSPHATE

## ACHROMYCIN\* V

TETRACYCLINE BUFFERED WITH PHOSPHATE

### SYRUP

Orange Flavor. Each teaspoonful (5 cc.) contains 125 mg. of tetracycline, phosphate-buffered. Bottles of 2 and 16 fl. oz.

### LIQUID PEDIATRIC DROPS

Orange Flavor. Each cc. contains 100 mg. of tetracycline, phosphate-buffered. (Approx. 5 mg. per drop). 10 cc. plastic dropper-type bottle.

### FLUID

### FLAVOR

### FASTER ACTION

### REMEMBER THE V WHEN SPECIFYING

New phosphate-buffered ACHROMYCIN V is the faster-acting oral form of ACHROMYCIN Tetracycline, chemically conditioned for greater antibiotic absorption/faster broad-spectrum action.

aqueous, freely miscible,  
ready-to-use, no refrigeration

taste-true orange flavor,  
does not fade or go flat

earlier therapeutic blood  
levels, remarkable freedom  
from side effects

**ACHROMYCIN V dosage:**  
6-7 mg. per lb. of  
body weight per day.



LEDERLE LABORATORIES DIVISION, AMERICAN CYANAMID COMPANY, PEARL RIVER, N. Y.  
\*Reg. U. S. Pat. Off.

## MORE STOCKHOLDERS IN STEEL

The steel industry is growing more popular with investors. The American Iron & Steel Institute, spokesman for the industry, reports it has 885,000 individual stockholders, which is a figure exceeding its number of employees by about 61,000. The number has increased rapidly in the last twenty years, with 117,000 added in the last two years. Twenty years ago the industry had only 450,000 stockholders. The figure jumped to 600,000 in 1949 and topped 700,000 in 1951.

It is not only the wealthy investors that buy steel shares. The Institute estimates that three-fifths of the stockholders have incomes of less than \$5,000 a year.

United States Steel Corporation,

world's largest producer, reported at the end of 1956 that 110,485 women and 90,681 men owned a total of 30,790,567 shares of its common stock. Another 4,397,057 shares of U. S. Steel common was held in joint accounts.

Big Steel said charitable and educational groups, trustees, guardians, estates, brokers, insurance companies and other industries held the remaining 18,511,996 shares of outstanding common stock.

Roger M. Blough, U. S. Steel's board chairman, said the company had 308,388 registered holders of preferred and common stock at the end of 1956. He added that, no individual stockholder holds as much as three-tenths of one per cent of either the preferred or the common stock. The largest holding of both preferred and common stock among other than individual holders is about one and one-half per cent of both classes—common and preferred.

## SUGAR'S COMING AGE

The craze to reduce has treated the sugar industry unkindly but scientists are finding a way to take up the slack. The industry is planning to manufacture a wide variety of end products from sugar, including soaps that leave no bathtub ring, tooth paste that needs no flavoring, plastics and French dressing that needs no shaking. The brokerage firm of B. W. Dyer & Co., specialists in sugar, estimates that these and other products will boost consumption by 1,500,000 tons a year.

Plastics and detergents are sugar products nearest to actual commercial

**In seborrheic dermatitis**



**and many other skin disorders**

use new **Vioform-Hydrocortisone Cream**

antibacterial  
antifungal  
anti-inflammatory  
antipruritic

Tubes of 5 and 20 Gm.  
VIOFORM® (iodochlorohydroxyquin CIBA)

**C I B A** SUMMIT, N. J.

*See page following 102a  
for actual clinical demonstration*



*will her arms be  
filled this time?*

Improve your abortion-prone patient's chance of coming to term by creating optimal conditions for the maintenance of pregnancy with Nugestoral. Nugestoral supplies five agents known to contribute to fetal salvage. Taken in a dose of three tablets per day, Nugestoral will help bring your abortion-prone patients to term.

*new for the abortion-prone patient*

**NUGESTORAL®**

Each tablet contains ethisterone (Progestal®), 15 mg; hesperidin complex, 175 mg; ascorbic acid, 175 mg; sodium menadiol diphosphate (vitamin K analogue), 2.0 mg; dl, alpha-tocopherol acetate, 3.5 mg. In packages of 30 tablets.

**ORGANON INC.**

*Orange, New Jersey*

# NUGESTORAL<sup>®</sup>

*for the abortion-prone patient helps create  
an optimal maternal environment with:*

## Ethisterone (Progesterone)

Of renewed importance in the prevention of abortion,<sup>1-4</sup> luteal hormone prepares the uterus for implantation and maintenance of the conceptus. Its specific uterine relaxant action reduces the excessive uterine irritability so often found in habitual aborters. Ethisterone is the orally effective form of luteal hormone.

## Hesperidin and Vitamin C

Capillary permeability and fragility may be involved in habitual abortion.<sup>5-9</sup> Since bioflavonoids, particularly hesperidin, acting conjointly with vitamin C, foster capillary integrity, these agents have been employed in habitual aborters to protect decidual vessels, with high fetal salvage as a result.<sup>6-8</sup>

## Vitamin K

The value of vitamin K during pregnancy to prevent bleeding tendencies in both mother and infant is long-established. In addition, it appears that vitamin K may be of value in habitual aborters,<sup>6,10,11</sup> to prevent frequently encountered hemorrhagic diathesis,<sup>7</sup> particularly if membranes rupture prematurely or cervix obliterates and dilates early.<sup>12</sup>


## Vitamin E

Alpha-tocopherol is considered by many obstetricians to be part of the standard therapeutic regimen for poor-risk obstetrical patients, as an extra precaution which has often proven of value. Alpha-tocopherol acetate, particularly, has been credited with improving fetal salvage in many nutritionally inadequate women.<sup>13,14</sup>

*To Help Preserve Pregnancy In the Abortion-Prone Patient*

# NUGESTORAL<sup>®</sup>

ORGANON INC. Orange, New Jersey

- 
1. Titus, P. Management of Obstetrical Difficulties, C. V. Mosby, 1955.
  2. Wilson, R. B., Am. J. Obst. & Gynec., 69:614, 1955.
  3. Falls, F., Am. J. Obst. & Gynec., 69:626, 1955.
  4. Proceedings of the Internat. Cong. on Obst. & Gynec., 1954, 693, 763, 758.
  5. Greenblatt, R. B., Obst. & Gynec., 2:530, 1953.
  6. Javert, C. T., Ann. New York Acad. Sc., 61:700, 1955.
  7. Greenblatt, R. B., Ann. New York Acad. Sc., 61:713, 1955.
  8. Javert, C. T., Obst. & Gynec., 3:420, 1954.

9. Dill, L. V., M. Ann. Dist. Columbia, 23:667, 1954.
10. Javert, C. T., and H. J. Stander, Surg., Gynec. & Obst., 76:115, 1943.
11. Javert, C. T., and W. H. Finn, Texas State J. Med. 46:719, 1950.
12. Guttmacher, A. F., in Eastman, N. I., Williams Obstetrics, Appleton-Century-Crofts, 1956.
13. Sheffery, J. B., and L. V. Dill, M. Clin. North America, 31:696, 1947.
14. Hertig, A. T., and R. G. Livingstone, New England J. Med. 230:797, 1944.

to help  
pregnant  
patients  
toward  
their  
normal  
regularity




# EX-LAX

**PALATABLE**

**EFFECTIVE**

**WELL-TOLERATED**



Ex-Lax is often recommended during pregnancy, because pleasant taste and gentle action require special consideration. Phenolphthalein, the active ingredient of Ex-Lax, acts gently, overnight . . . "in the morning produces a stool very much like normal"<sup>1</sup> . . . continues to act as a "mild aperient for several days,"<sup>2</sup> lessening need for frequent medication. No "adverse effects, such as tissue irritation, toxic symptoms or interference with the normal physiological functions"<sup>3</sup> were observed by isotope research.

1. H. Beckman: Treatment in General Practice. W. B. Saunders Co., 1946; p. 478.
2. A. Grollman: Pharmacology and Therapeutics. Lea & Febiger, 1954; p. 391.
3. W. J. Vasek, W. C. Liu, L. J. Roth: Studies on the Fate of Carbon-14 labeled Phenolphthalein. Jour. Pharmacol. and Exp. Therapeutics, July 1956; 117:347.

production, it says. The coming age of sugar by-products is being explored by a new branch of chemistry known as sacrochemicals.

Detergents produced from sugar will be tasteless, non-toxic and non-irritating "even to tender skins," the report said. It added that sugar detergents are expected eventually to capture one-half of the entire present market for synthetic soaps.

Somewhat further away, the report said, is the commercial development of

phenolic plastic based on sugar. "This product is still in the laboratory, but seems to have a promising future."

The study said such a plastic is alleged to be cheaper to manufacture, lighter in color and to have other physical properties which will enable it to be competitive with other plastics.

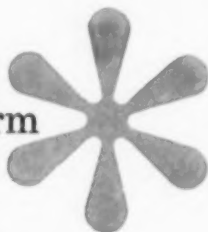
"As the sugar market is relatively easily expanded from year to year," the report said, "neither of these potential uses for additional sugar are likely to cause a shortage or higher prices."

### FUNDS MORE OPTIMISTIC

Toward the close of last year there was a tendency in the \$10,000,000,000 investment company industry to take a more defensive position. The trend was toward senior securities, or bonds, and away from common stocks, or equities.

There was a relaxation in this strong defensive position during the first quarter, and the pace was stepped up in the second quarter, indicating that the portfolio managers are looking with more favor on the stock market.

now in cream form



## STEROSAN®-Hydrocortisone

(chlorquinaldol GEIGY with hydrocortisone)

cream

*comprehensive control of skin disorders*

infectious dermatoses • contact dermatitis • atopic dermatitis • nonspecific pruritus



combats infection  
reduces inflammation  
controls itching  
promotes healing

STEROSAN®-Hydrocortisone (3% chlorquinaldol GEIGY with 1% hydrocortisone) Cream and Ointment. Tubes of 5 Gm. Prescription only.  
and when a nonsteroid preparation is preferred STEROSAN® (chlorquinaldol GEIGY) 3% Cream and Ointment. Tubes of 30 Gm. and jars of 1 lb. Prescription only.

**GEIGY**  
Ardley, New York

MEDICAL TIMES

dual action...

relieves tension—mental and muscular

*notably safe*

**Equanil**®

meprobamate

Licensed under U.S. Pat. No. 2,724,720

NEW  
200-mg.  
SHIELD-  
SHAPED  
TABLET

**Wyeth**

A quarterly survey of 74 leading investment companies, prepared by "The Commercial & Financial Chronicle," shows that in the second quarter 67.8 per cent of all new buying was in common stocks. It was 63.3 per cent in the first three months of the year.

Despite the high yields available on senior securities, because of prevailing interest rates, purchases of these obligations, although substantial, declined 14 per cent in the second quarter from the first quarter. The excess of senior securities' buying over selling declined 31.9 per cent.

By contrast, in the last quarter of last year the purchase of senior securities exceeded that of common stock by 11 per cent. In addition, equity sales out of portfolio exceeded equity purchases by 12 per cent.

It might be noted, however, that within the investment company industry the divergence is increasing between those funds following an aggressive policy and those adhering to a defensive position.

Of the seventy-two investment companies included in "The Chronicle's" study, twenty-seven increased their holdings of net cash and government bonds as a per cent of total net assets during the last quarter.

Among the thirty-one mutual funds with balanced portfolios of common and preferred stocks and bonds, nine increased their cash-government position.

Knickerbocker Fund, for example, stepped up this position from 10 to 18 per cent of total net assets; Loomis-Sayles Mutual Fund, from 15.5 to 19.4; while Value Line Fund barely decreased its holdings of cash and governments, from 37.8 to 34.8 of total net assets.

Of the thirty-one stock funds, thirteen stepped up their cash position. Bullock Fund went up from 11.5 to 14.8 per cent of assets; Dreyfus Fund, from 2 to 18.6 per cent, and Investment Co. of America, from 4.3 to 16.8 per cent.

In twelve closed-end investment companies included in "The Chronicle's" survey, five stepped up the cash position, led by Carriers & General, which went from 6.6 to 15 per cent.

In the analysis, forty-one of the seventy-two companies which report on common-stock transactions were net buyers of equities, twenty-one were net sellers and ten showed a stand-off.

Looking at the investment companies' policies toward industry groups, it might be said, in general, that the managements were bullish toward farm equipment stocks, autos, banks, drugs,

in atopic eczema



and many other skin disorders  
use new **Vioform-<sup>®</sup>**  
**Hydrocortisone**  
**Cream**      antibacterial  
antifungal  
anti-inflammatory  
antipruritic

Tubes of 5 and 20 Gm.  
VIOFORM<sup>®</sup> (lisdexchlorhydroxyquin CIBA)

**C I B A** SUMMIT, N.J.

See page following 102a  
for actual clinical demonstration



# drug-induced constipation... a recurrent problem

"antispasmodics, anticholinergics and  
hypotensive agents have a definite  
constipating effect."<sup>1</sup>

"Constipation... can be a serious  
drawback to the use of any  
ganglionic blocking agent."<sup>2</sup>

Olson<sup>3</sup> reports that patients in a controlled study, suffering from drug-induced constipation, were able to continue medication when Veracolate was administered at the same time. His patients "found Veracolate satisfactory therapy at a t.i.d. dosage", and were able to re-establish and maintain regular bowel habits despite the costive influence of other drugs. Patients whose constipation was due to other causes, also responded very favorably to Veracolate, the physiologically-active laxative.

1. Hootnick, H. L.: *J. Am. Geriatrics Soc.* 4:1021 (Oct.) 1956. 2. Moyer, J. H.: *GP* 15:109 (Feb.) 1957. 3. Olson, J. A.: Personal communications.

## VERACOLATE®

FOR DRUG-INDUCED CONSTIPATION

STANDARD LABORATORIES, INC. • MORRIS PLAINS, N. J.

now—in atherosclerosis...  
reduce plasma cholesterol  
levels  
"safely"  
... "significantly"

# vastran

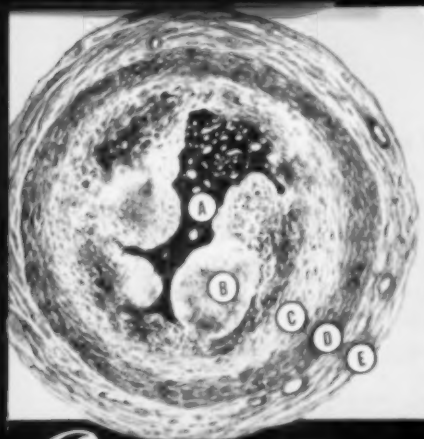
VASTRAN FORTE<sup>®</sup> offers an important new approach to the management of atherosclerosis, by providing nicotinic acid in high concentration to reduce plasma cholesterol levels. It also provides various factors of the B-complex to spark cellular metabolism<sup>1,4,7</sup> and protect against latent vitamin deficiencies that may be precipitated by large dosage of a single B factor.<sup>3,7</sup>

Recent clinical evidence<sup>2,6</sup> indicates that the administration of nicotinic acid in large doses "significantly" reduces plasma cholesterol levels in patients with hypercholesterolemia and causes the pattern of blood lipids to "change toward normal."<sup>6</sup>

In two independent studies<sup>2,6</sup> embracing a total of 86 subjects, the administration of nicotinic acid brought about reduced plasma cholesterol levels in 81.4 per cent. As one report emphasized, nicotinic acid is "a safe drug" which can favorably alter the concentration of blood lipids in hypercholesterolemic patients.<sup>6</sup>

Among the disorders springing from long-standing hypercholesterolemia are atherosclerosis,<sup>5</sup> arteriosclerosis, gallstones, strawberry gallbladder and chronic degenerative lesions of the eye.<sup>8</sup>

WAMPOLE  
86<sup>TH</sup>  
YEAR



(A) Recanalized thrombus in lumen  
(B) Atheromatous plaque  
(C) Fibrous intima  
(D) Media  
(E) Adventitia

# forte'

CAPSULES

RALLY EFFECTIVE PLASMA CHOLESTEROL REDUCER

In each VASTRAN FORTE' capsule:

Nicotinic acid .....	375.0 mg.
Ascorbic acid .....	50.0 mg.
Riboflavin .....	2.5 mg.
Thiamine mononitrate .....	5.0 mg.
Cobalamin concentrate .....	1.0 mcg.
(Vitamin B <sub>12</sub> activity)	
Calcium pantothenate .....	2.5 mg.
Pyridoxine hydrochloride .....	0.5 mg.

**Dosage:** Two capsules 4 times a day. Administration is limited to 6 months' duration. See literature available on request.

**Supply:** Bottles of 100 capsules.

**References:** 1. Agarwal, L. P., and Gatt, K.: *Am. J. Ophthalmol.* 37:764, 1954. 2. Aitschul, R., Hoff, A., and Stephen, J. D.: *Arch. Biochem.* 54:558, 1955. 3. Gregory, I.: *J. Mental Sci.* 101:85, 1955. 4. *J.A.M.A.*: Editorial: Relationship of Vitamins to Enzymes 111:28, 1938. 5. Keys, A.: *J. Mt. Sinai Hosp., N.Y.* 20:118, 1954. 6. Parsons, W. B., Jr., Achor, R. W. P., Berge, K. G., McKenzie, B. F., and Barker, R. W.: *Proc. Staff Meet. Mayo Clin.* 31:377, 1956. 7. Sobrell, W. H., and Harris, R. S.: *The Vitamins; Chemistry, Physiology, Pathology* Academic Press, 1954, v. 2, p. 551. 8. Stambul, J.: *The Mechanisms of Disease*, Froben Press, New York, 1952, pp. 241, 280, 294, 295.

## WAMPOLE LABORATORIES

Henry K. Wampole & Co., Inc. • Philadelphia 23, Pa.

## CLINICAL REPORT HIGHLIGHTS

**1** In 18 patients whose concentration of plasma cholesterol was consistently higher than 250 mg. per 100 cc., the administration of nicotinic acid in high dosage reduced cholesterol levels significantly in 12.<sup>4</sup> The pattern of blood lipids changed toward normal in the majority of the 18 patients.

The ratio of beta-lipoprotein cholesterol to alpha-lipoprotein cholesterol decreased in 15 of the 18 patients.

Side effects were mild to moderate. Treatment was withheld for a few days in 2 cases, but was successfully resumed without recurrence of side effects.

It was concluded that nicotinic acid is a safe drug which may favorably alter the concentration of blood lipids in some patients with hypercholesterolemia.

...

**2** When nicotinic acid was administered to 11 normal persons and 57 patients with various diseases, it reduced serum cholesterol levels in 58 of the 68 subjects.<sup>2</sup> Hypercholesterolemic levels were more affected than normal levels.

In contrast to nicotinic acid, nicotinamide was ineffective in reducing plasma cholesterol.

Send for samples of  
VASTRAN FORTE' and  
comprehensive data

finance companies, food, insurance, machinery, paper, public utilities, radio and television, steel and tires.

Selling predominated in the air-line and natural-gas stocks, while there was

a mixed attitude toward aircrafts, auto parts, building, chemicals, containers and glass, electronics, metals, office equipment, oils, rails, rail equipment and tobaccos.

#### MUTUAL FUND NOTES

● During the first six months of 1957, Wellington Fund increased its total resources from about \$578,000,000 to more than \$629,000,000, a record high. During the same period the net asset value of each Wellington share increased from \$12.99 to \$13.22.

Walter L. Morgan, president, pointed out that on June 30 the fund had 64 per cent of its resources in a diversified list of 140 common stocks in 28 different industries and the balance in a backlog of government and good grade

corporate bonds and preferred stocks. He added that the fund increased its holding of investment grade corporate bonds and preferred stocks from 26 per cent to 29 per cent of resources during the six months.

● Keystone Growth Fund K-2 added to its oil and drug holdings but cut its paper and metals and mining interests in the first half of the year. Capital value increased 7½ per cent during the year as the fund reached new highs in net assets, number of shareholders, and

**two reasons  
for the  
growing use  
of Serpasil\*  
in everyday  
practice**

**Serpasil can always  
be considered  
first in hypertension**



*Alone, reduces blood pressure, slowly and safely, in about 70 per cent of mild to moderate cases.<sup>1</sup> As a "primer," Serpasil can advantageously be used to begin therapy, however severe the case, to adjust the patient to the physiologic setting of lower pressure. As a "background" agent throughout other therapy, Serpasil permits lower dosage of more potent agents, thus minimizing side effects. Average Dose: two 0.25-mg. tablets daily for one week, then maintenance on 0.25 mg. or less daily.*

1. Coan, J. P., McAlpine, J. C., and Boone, J. A.: J. South Carolina M. A. 51:417 (Dec.) 1955.

shares. As of June 30 it had total net assets of \$28,271,917, up from \$23,369,902 a year ago. The number of shareholders increased 3,333 to a new high of 12,363, and shares increased approximately 300,000. Net asset value per share was \$12.81 compared with \$12.34 a year ago.

● Net assets of Broad Street Investing Corporation were \$100,061,360 at June 30, which marks a new quarter-end high for this diversified mutual fund, Francis F. Randolph, chairman and president, reports. This compared with \$94,518,508 at the start of 1957. During the first six months, investors increased their investment in Broad Street Investing by \$5,063,731, represented by 233,817 new shares.

Per share asset value was \$21.95 at the mid-year as compared to \$21.37 at March 31 and \$21.85 at the beginning

of 1957. Common stock holdings increased in value in the first six months, but bond and preferred stock prices were depressed by tight money conditions.

● Total net assets of Selected American Shares at June 30 were \$67,430,053, equal to \$8.86 a share; in addition a 93-cent capital gain distribution was paid in January, 1957. These figures compare with \$58,764,720 or \$9.77 a share on June 30, 1956. Dividends from investment income totaling 14 cents a share were paid in the first half, the same amount per share paid in the first half of 1956. Outstanding shares at June 30 of 7,609,962 compare with 6,011,801 a year ago.

● Total net assets of the four mutual funds sponsored by Axe Securities Corporation rose \$4,879,849 in the first half. The combined assets of the funds

## Serpasil provides true emotional control

Recommended for the many patients who are too nervous or agitated to be adequately calmed by sedatives or weaker tranquilizers. Serpasil actually sets up a "stress barrier" against anxiety and tension these patients would otherwise find intolerable. *Average Dose: 0.1 mg. to 0.5 mg. (two 0.25-mg. tablets) daily.*

*Although it is a first choice in hypertension, Serpasil does not significantly lower blood pressure in normotensive patients.*

### SUPPLIED:

TABLETS, 0.1 mg., 0.25 mg., 1 mg., 2 mg., and 4 mg.

ELIXIRS, 0.2 mg. and 1 mg. per 4-ml. teaspoon.

PARENTERAL SOLUTION: Ampuls, 2 ml., 2.5 mg. Serpasil per ml.

Multiple-dose Vials, 10 ml., 2.5 mg. Serpasil per ml.



hypertension and emotional disorders

# Serpasil®

(reserpine CIBA)

—Axe-Houghton Fund A, Fund B and Stock Fund and Axe Science & Electronics Corporation—were \$136,310,733 on June 30 as against \$131,930,834 on December 31, 1956. The funds also reported a 14 per cent increase in the number of shareholders—from 70,032 to 79,321—during the six months.

● Century Shares Trust, oldest and largest mutual investment company specializing in insurance company and

bank stocks, reports total net assets of \$50,347,364 on June 30, equal to \$23.11 per share as compared with \$22.05 on December 31, 1956 when total net assets were \$47,097,030. Including the capital gains distribution of 73 cents per share paid last January 31, this represents an increase of 3.3 per cent. During the six-month period, the number of shares outstanding increased from 2,136,291 to 2,178,755.

### THAT TIRED FEELING

More women than men are guilty of being "stay-at-homes," if we are to believe a survey of New York City business establishments prepared by the Commerce & Industry Association of that city. As for holding their jobs, they rate about equally with the males.

The results may not be typical of the

nation, but at least it represents the findings in 172 organizations which participated in the survey.

These concerns have 69,367 office workers, divided 51.4 per cent female and 48.6 per cent male. During the year the average absentee rate was 3.4 per cent of each hundred ladies and 2.0

## more reasons for the growing



### in tachycardia

#### Serpasil slows the rapid heart

By prolonging diastole and allowing more time for the myocardium to rest, Serpasil enhances blood flow and cardiac efficiency.

R 0.1 mg. to 0.5 mg. (two 0.25-mg. tablets) daily.



### in alcoholism

#### Serpasil relieves drink-inducing tension

Long-term therapy with oral Serpasil helps the alcoholic "stay on the wagon," makes him more amenable to counseling. Parenteral Serpasil generally controls delirium tremens within 24 hours.

R *Chronic phase:* two 0.25-mg. tablets or less daily. *Acute phase:* two 2.5-mg. parenteral doses (1 ml. each) 3 or 4 hours apart. Occasionally, repeat injections may be necessary every 4 to 6 hours.



### in premenstrual tension

#### Serpasil controls the "cyclic" change in personality

In the many women who become irritable, easily fatigued and apprehensive as the menstrual period approaches, Serpasil exerts a calming effect which moderates their periodic change in personality.

R 0.25 mg. b.i.d., beginning 10 days before expected onset of menses.

per cent of each hundred men.

Highest monthly rate was in January, 1957, with 4.7 per hundred women absent and 2.4 of the men. Lowest rate occurred in July, 1956—2.5 for the women and 1.6 for the men.

Based on the total of all employees in each category, 32.2 per cent of the women and 19.1 per cent of the men stayed away from their jobs on an average of at least once in each month of the covered year.

As to turnover, the rate of separation from or termination of employment, over the year for men averaged 3.0 per hundred and for women 2.7, with the highest rate in September, 1956 (4.0 men; 4.3 women) and the lowest in December (1.1 men, 1.6 women).

The rate of accessions (new hires) for the year averaged 4.0% for men and 3.1% for women, while the average replacement rate was 2.5% male and 2.3% female.

### GOOD SECRETARIES ARE SHORT

Perhaps we should change that headline. We don't mean that if the jewel in your office stands six feet tall, she is no good. We mean that good secretaries are in short supply.

Further disquieting news comes from "The New Englander" magazine, which

advises us the shortage is expected to remain acute well into the next decade, and possibly longer.

The "female help wanted" sections of newspapers are crammed with job offers—and there's an undertone of desperation in many of them.

## Use of Serpasil® (reserpine CIBA)

One of the safest, least toxic and most effective agents in everyday practice



### in hypertensive crises

#### Serpasil saves lives

Used alone or as background to more potent agents, parenteral Serpasil lowers acutely elevated blood pressure promptly and safely.

R 2.5 mg. (1 ml.) intramuscularly. Repeat every 8 to 24 hours as necessary.



### in acute psychotic disturbances

#### Serpasil permits discreet management

Parenteral Serpasil subdues violently agitated psychotic patients, renders them amenable to "quiet" hospitalization.

R 5 mg. intramuscularly followed, if necessary, by another 5-mg. intramuscular dose in 90 minutes.

C I B A  
SUMMIT, N. J.

SERPASIL® (reserpine CIBA)

2-11-58-100



*just one specific  
therapeutic purpose*

*to curb the appetite  
of the overweight patient*



**PRELUDIN**

(brand of phenmetrazine hydrochloride)

PRELUDIN makes reducing:

*Effective* because it provides potent appetite suppression, while minimizing the undesirable effects on the central nervous system which may be encountered with certain other weight-reducing agents.<sup>1</sup>

*Comfortable* because it virtually eliminates nervous tension, palpitations and loss of sleep.<sup>2</sup>

*Notably safe* because it is not likely to aggravate coexisting conditions, such as diabetes, hypertension or chronic cardiac disease.<sup>3</sup>

References: (1) Holt, J. O. S., Jr.: *Dallas M. J.* 42:497, 1956. (2) Gelvin, E. P., McGavack, T. H., and Kenigsberg, S.: *Am. J. Digest. Dis.* 7:155, 1956. (3) Natanson, A. L.: *Am. Pract. & Digest Treat.* 7:1456, 1956.

Preludin® (brand of phenmetrazine hydrochloride). Scored, square, pink tablets of 25 mg. Under license from C. H. Boehringer Sohn, Ingelheim.

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Ardsley, New York







With great expectations...

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*prenatal phosphorus-free  
vitamin-mineral capsules, Mead Johnson*

*phosphorus-free...generous calcium*



For the modern pregnant woman, just 1 to 3 small, easy-to-swallow capsules daily—according to her individual need—provide generous amounts of iron, calcium and vitamins to help her meet the stress of pregnancy. And they're economical, too—in bottles of 100.

For some patients, you may prefer to prescribe Natalins,<sup>®</sup> which contain *both* calcium and phosphorus.

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SYMBOL OF SERVICE IN MEDICINE

in any urinary tract disorder  
Pyridium<sup>®</sup> is the specific for  
fast relief of pain, urgency,  
frequency and burning

**Pyridium<sup>®</sup>**

WARNER-CHILCOTT

Pyridium brings relief within 20-25 minutes. Pyridium is compatible with and complementary to all specific therapies, whether medical or surgical. With Pyridium you have greater flexibility in the use of any potency or dosage schedule required for successful treatment.

*Dosage:* 2 tablets before each meal.

*Supplied:* Bottles of 12, 50, 500 and 1,000.

The "New Englander" found:

A legal firm advertising for a secretary—"legal experience not essential."

Employment agency ads with the notation—"the employer will pay the fee."

One firm suggested girls with secretarial experience might "drop in for a cup of coffee and discuss attractive openings."

Another ad says: "The salary is open. We will foot the cost of travel expenses for the interview and the expense of relocation."

### NOT SO EXCLUSIVE

The station wagon was once regarded as a possession suitable only for the wealthy. Apparently our booming economy has broken down the exclusive station wagon set. So we judge from figures issued by the Ford Motor Co.

Back in 1940 this type of vehicle accounted for only one per cent of Ford's sales. Today they account for 11 per cent, which is a record.

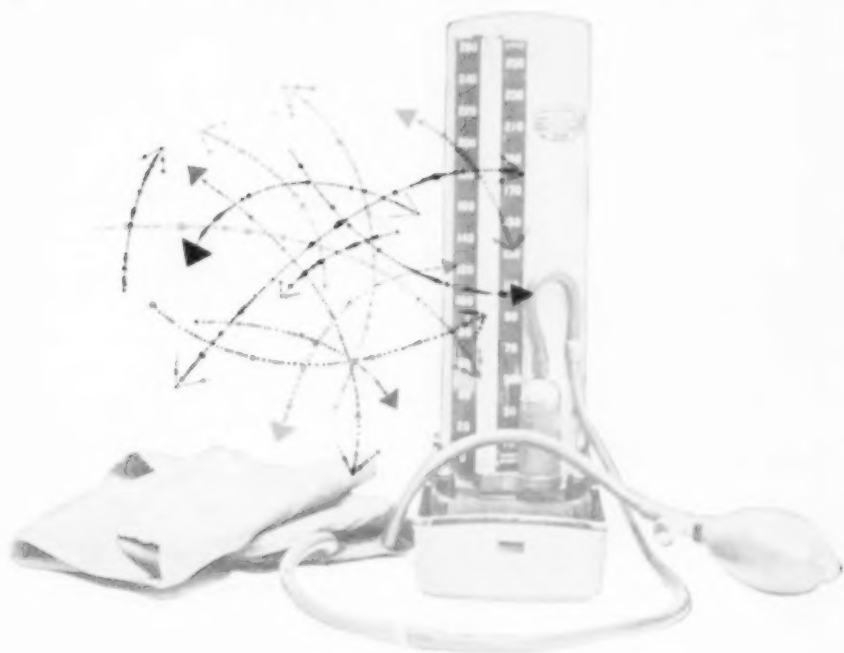
The company ascribes this to the population "explosion," the flight to the suburbs and the higher income of millions of Americans.

During the 1940-56 period, factory sales increased more than 25 times from 25,098 units to 633,503 units. Although 1956 was the best year for the station wagon on a percentage basis, its greatest volume was 759,422 in 1955.

The company reported that its station wagon sales increased by more than 1,000 per cent from 24,696 units in the five years ending in 1956.

It noted that the modern all-metal station wagon is a far cry from its early wooden predecessor that graced rolling country estates and was synonymous with rustic elegance.

in hypertension with anxiety



... because you want total response  
—somatic and psychic

**POSITIVE ANTIHYPERTENSIVE ACTION**

in moderately severe, severe,  
or malignant hypertension

**ANSOLYSEN<sup>®</sup>**  
TARTRATE

Pentolinum Tartrate, Wyeth

**LOWERS BLOOD PRESSURE**

**POSITIVE ANTIANXIETY ACTION**

in attendant emotional stress,  
apprehension, tension

**Equanil<sup>®</sup>**

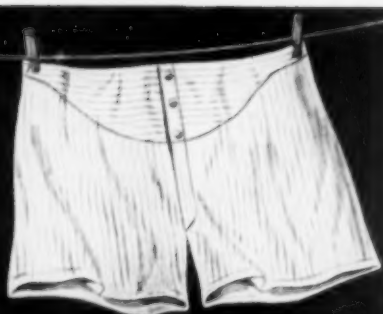
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**RELIEVES TENSION—  
MENTAL AND MUSCULAR**



Philadelphia 1, Pa.



shrinks  
the  
appetite



## BONTRIL

Curbs excessive desire for food

Eases bulk hunger

Reduces nervous-tension hunger

**DOSAGE:** 1 or 2 tablets upon arising and at 11 A.M. and at 4 P.M.

**SUPPLIED:** White, scored tablets in bottles of 100 and 1000.

Each Bontril Tablet contains:  
Dextro-amphetamine sulfate 5 mg.;  
Butabarbital sodium 10 mg.;  
Methylcellulose 350 mg.

**CARNRICK**

G. W. Carnrick Co., Newark 4, N. J.

## MODERN

## THERAPEUTICS

### Clinical Trial of Sulfaethylthiadiazole in Sustained Release Form

The antibacterial agent, sulfaethylthiadiazole (SETD), was administered to a series of 250 patients with local and systemic infections, mostly infections of the respiratory or genitourinary tract. The drug is given in a sustained release liquid form containing microscopic particles in an aqueous vehicle, the particles disintegrating at varying rates. The usual adult dosage was 2 Gm. (one tablespoonful) every 12 hours.

R. J. Bischoff, M.D. and E. H. Mercer, M.D. reported that of 159 different organisms isolated from the patients and tested for sensitivity to SETD, 151 (95 per cent) were found to be sensitive. Of the 250 patients studied, 240 (96 per cent) were cured or greatly improved. The duration of treatment ranged from 5 to 8 days. There was no instance of serious side reactions, such as crystalluria, hematuria or renal blockage, to the drug. Two patients had mild diarrhea and two had slight rashes which may or may not have been related to therapy. Sustained release tablets given to a series of 103 additional patients gave about the same results clinically.

### The Use of Rauwolfia in Malnutrition

Malnutrition seen in hospitalized pa-

—Continued on page 136a

MEDICAL TIMES



We're troubled with a quandary syndrome.....

The leading symptom is: Would you prefer to receive only that pharmaceutical product information which you request? Presuming that you might, we're offering a method for you to control your mail.

Currently, we're sending no regular mailings for product promotion. But, of course, the information is available. Simply write on your R blank the names of the Massengill products you're interested in, and mail it to us. Forthright, we'll forward the literature.

Just to remind you, over the page we've listed a number of the leading Massengill pharmaceutical products. Please write to us, if you want more information about any of them.

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**Obedrin®** To help the overweight patient establish correct eating patterns.

**Homagenets®** The only solid homogenized vitamins. Three formulas: prenatal, pediatric, and therapeutic.

**Livitamin®** The preferred hematinic, with *peptonized* iron.

**Salcori®** Cortisone-salicylate therapy, without undesirable side reactions.

**Masengill® Powder** The non-irritating douche which enjoys unusual patient acceptance.

**Aminodrox®** Wider usefulness for aminophylline. Dependable, convenient oral therapy.





## when effective dosage in hypertension is difficult to establish and maintain

Many hypertensive patients 'escape' the therapeutic effects of medication regardless of the hypotensive agent used. This problem is further complicated when the drug's potency varies with different manufacturing lots.

With Veralba-R, however, continued response to effective dosage can be expected in most cases. Chemical assay of Veralba-R insures constant

potency from lot to lot. Once Veralba-R dosage is established for the individual patient, there is seldom any need for dosage adjustment.

**Composition:** Each grooved, uncoated Veralba-R tablet contains 0.4 mg. of chemically standardized protoveratrine and 0.08 mg. of reserpine.

Literature and clinical supply package available to physicians on request.



# VERALBA-R<sup>TM</sup>

PITMAN-MOORE COMPANY  
DIVISION OF ALLIED LABORATORIES, INC., INDIANAPOLIS 6, INDIANA

## MODERN THERAPEUTICS

—Continued from page 134a

tients is frequently difficult to manage. Response is not obtained, often times, by the administration of a high calorie diet supplemented with vitamins, liver extracts, cyanocobalamin, antibiotics and testosterone.

L. Dinkin, M.D. reported that a series of 42 selected patients were treated with daily doses of 200 mg. crude Rauwolfia or up to 0.75 mg. reserpine in addition to the prescribed diet or other medication. The drug was administered for 4 to 24 weeks, a placebo was substituted for 3 to 10 weeks, then the drug was resumed. As a result of this therapy 35 patients gained weight and showed an improved general clinical status. The average gain in weight was about 7 lb. There were no side effects of significant

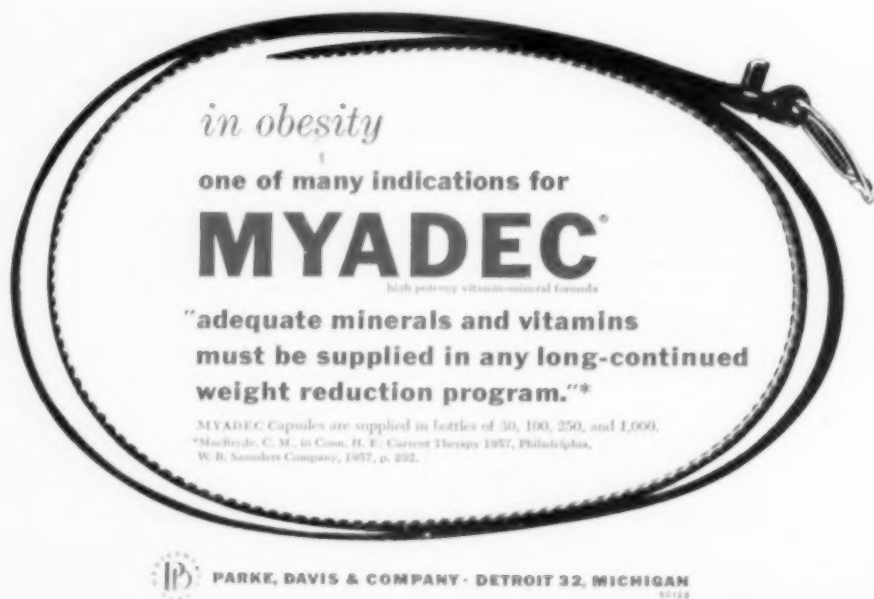
nature. In comparison, reserpine seemed to provide somewhat superior results to those of crude Rauwolfia.

### Danger of Systemic Antispasmodic Drugs in Precipitating Glaucoma

Systemic antispasmodic drugs cause little change in the intraocular tension in the normal eye. However, in eyes with chronic glaucoma or in eyes with a predisposition to glaucoma, certain of the systemic antispasmodics may produce a dangerous increase in the intraocular tension which may result in an acute attack of glaucoma. Doctors M. Cholst, S. Goodstein, C. Berens, and A. Cinotti reported that these drugs may also sometimes nullify the effect of miotic drugs being instilled in glaucomatous eyes.

One antispasmodic drug, dicyclomine (Bentyl) hydrochloride, was found to

—Continued on page 138a



*in obesity*


one of many indications for

**MYADEC®**

high potency vitamin-mineral formula

"adequate minerals and vitamins must be supplied in any long-continued weight reduction program."\*

MYADEC Capsules are supplied in bottles of 30, 100, 250, and 1,000.  
\*MacBryde, C. M., in Conn, H. F.: *Current Therapy* 1957, Philadelphia, W. B. Saunders Company, 1957, p. 292.

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**NEW!  
IMPROVED!**

# Medihaler®

automatically measured-dose aerosol medications

## In Asthma and other allergic states

Both vial and Oral Adapter for Medihaler preparations are improved: The 10cc. vial for all Medihaler medications is now made of shatterproof stainless steel. The Oral Adapter is shorter, handier to use. New combination package includes Oral Adapter for patient's first prescription. No need for carrying case.

**Medihaler-EPI®** Riker brand epinephrine bitartrate, 7.0 mg. per cc., suspended in inert, nontoxic aerosol vehicle. Contains no alcohol. Each measured dose 0.15 mg. actual epinephrine. In 10cc. metal vial with measured-dose valve.

Indicated for quick relief of bronchospasm of any origin—asthma, bronchiectasis, emphysema.

Acts more rapidly than subcutaneous epinephrine in acute allergic reactions.

**Medihaler-ISO®** Riker brand isoproterenol sulfate, 2.0 mg. per cc., suspended in an inert, nontoxic aerosol vehicle. Contains no alcohol. Each measured dose 0.06 mg. actual isoproterenol. In 10cc. metal vial with measured-dose valve.

Unsurpassed for rapid relief of bronchospasm of any origin—asthma, bronchiectasis, emphysema.

**SMALLER...MORE CONVENIENT...SHATTERPROOF...EVER-READY**



**SIMPLER TO USE...RAPID, PROLONGED RELIEF...SAFE FOR CHILDREN TOO**

The same automatic measured-dose principle which has made Medihaler famous. Uniform particle size. Always spillproof, leakproof; constant dosage. Now also shatterproof, and with smaller sterilizable, unbreakable Oral Adapter. Nothing to pour or measure. Prescribe Medihaler medication with Oral Adapter on first prescription. REFILLS AVAILABLE WITHOUT ORAL ADAPTER.

### **The Medihaler Principle**

is also available in Medihaler-Phen™ (phenylephrine-hydrocortisone-neomycin) for lasting, effective relief of nasal congestion.

**Riker**

LOS ANGELES

## MODERN THERAPEUTICS

—Continued from page 136a

have little or no effect on the intraocular pressure of both normal eyes and eyes with chronic simple glaucoma.

### A New Synthetic Analgesic, Anileridine

The effectiveness of a new synthetic analgesic, anileridine phosphate, was investigated and the results reported by I. M. Rifkin, M.D., R. Presig, M.D., H. H. Wheaton, M.D., M. E. Landman, M.D., and B. E. Schwarz, M.D. The drug was given in doses of 10 to 25 mg. intravenously at the beginning of the surgical procedure. Barbiturates were used for the anesthetic induction. The

patient was brought down to surgical anesthetic levels with nitrous oxide-oxygen and with cyclopropane or ether. Anileridine was found to potentiate the effect of nitrous oxide and to make possible a lighter anesthesia throughout the operation with a more rapid and smoother recovery. However, assisted respiration was required and larger doses of succinylcholine were required for abdominal procedures.

In the control of postoperative pain, anileridine was found to be equal to morphine with a minimum incidence of side reactions. The effects were compared with meperidine, alphaprodine, levorphanol tartrate and morphine sulfate on 278 patients. The dosage range was 25 to 100 mg. intramuscularly. Re-

—Continued on page 140a



## IN IMPOTENCE

In a recent study (1) coitus was made possible in 85% of 67 cases of impotency with the use of 1 cc. of GLUKOR intramuscularly twice weekly, and maintained once weekly or as little as once monthly.

GLUKOR has also been found valuable in the male climacteric, male senility, angina pectoris, coronary thrombosis and other conditions associated with gonadal decline. GLUKOR may be used regardless of age and/or pathology, without side reactions. There are no contraindications. Antagonism with any other drug has not been observed.

1. Gould, W. L.: Impotence, M. Times 84:302 (March) 1956

# GLUKOR®

Each cc. contains:—200 I.U. chorionic gonadotropin, 25 mg. thiamine HCl, 52.5 p.p.m. 1(+)-glutamic acid, 0.5% chlorobutanol and 1% procaine HCl.

Available in 10 cc. and 25 cc. multiple-dose vials.

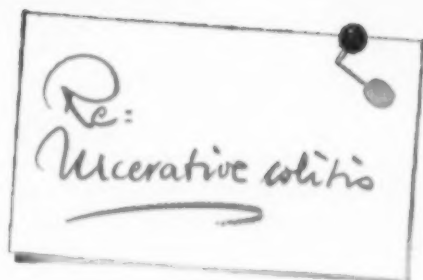
RESEARCH SUPPLIES • ALBANY, NEW YORK

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\*Reg. U. S. Pat. Off. Patent Pending ©1957

Also available:—An analogous preparation for the female — GLUTEST  
... effective in refractory cases where other therapy fails.

This is "the most valuable drug that has been introduced for the treatment of ulcerative colitis" in recent years.<sup>1</sup> Results of treatment with Azulfidine "far exceed those of any previous drug used".<sup>2</sup> "It has been effective in controlling the disease in approximately two-thirds of patients who had previously failed to respond to standard colitis therapy currently in use."<sup>3</sup>



*Azulfidine*  
BRAND OF SALICYLAZOSULFAPYRIDINE

1. BARGEN, J. A.: "Present Status of Hormonal and Drug Therapy of Ulcerative Colitis", *South. M. J.* 48: 192 (Feb.) 1955.
2. BARGEN, J. A. and KENNEDY, R. L. J.: "Chronic Ulcerative Colitis in Children", *Postgrad. Med.* 17: 127 (Feb.) 1955.
3. MORRISON, L. M.: "Response of Ulcerative Colitis to Therapy with Salicylazosulfapyridine", *J. A. M. A.* 151: 366 (Jan. 31) 1953.

PHARMACIA LABORATORIES, INC.

## MODERN THERAPEUTICS

—Continued from page 138a

lief was usually obtained within 30 minutes and lasted from 2 to 3 hours.

### **The Neurosedative Effect of Ectylurea**

Ectylurea (2-ethyl-cis-crotonylurea) is a new sedative which is effective orally in a dose as low as 3 per cent of its lethal dose. It does not produce hypnosis until the dose is close to the lethal dose, according to H. G. Glass, M.D., K. G. Rink, and R. K. S. Lim, Ph.D. This drug has a lower single hypnotic dose than reserpine and chlorpromazine but a higher one than barbiturates. Because of its intermediate action, it has been described as a neurosedative.

Ectylurea exerts no effect on the respiration or circulation or on gastric secretion or motility in dogs and no analgetic or antielectroconvulsive activity in rats at any dose within the sedative range. Excretion via the kidneys is largely complete within 8 hours. No tolerance to continued daily dosage was observed. Chronic administration to rats and dogs for a period of 6 months caused no apparent toxic effects.

### **A Means for the Evaluation of Vasodilator Drugs**

The effect of intravenously administered azapetine (Ildar) hydrochloride on the bulbar conjunctival blood vessels was observed through a dissecting microscope. The observed effect was then compared with the plethysmographic recording of the digital pulse

**cut treatment time in half  
using half the amount of vitamin A**

**in acne,  
eczemas, dry scaly skin**

# **aquasol A**

**the original aqueous, natural  
high-potency vitamin A in capsule form**

volume, a method which has been used for some time for the evaluation of the effectiveness of vasodilating drugs.

J. M. Stallworth, M.D., J. V. Jeffords, M.D., and W. H. Lee, Jr., M.D., stated that good correlation was obtained between the vasodilating effect in the conjunctival vessels and the digital arteries. The observation of the conjunctival vessels affords an accessible and visible means of testing vasodilator drugs. Azapetine hydrochloride, administered intravenously in a dose of 1 mg. per kilogram over a 30 minute period provided effective vasodilation.

#### **Protective Effect of Prednisolone in Experimental Toxemia**

The survival time of mice given tetanus toxin or gas gangrene toxin and of guinea pigs given diphtheria toxin

was prolonged by the administration of prednisolone, according to a report by Doctors H. Seneca, O. K. Troc, and A. Johnson. They also found that soluble prednisolone hemisuccinate protected red blood cells *in vitro* from the effect of 4 hemolytic doses of *Micrococcus pyogenes aureus* hemolysin. The alcohol or acetate of prednisolone did not exhibit this effect. The authors suggested that these results justify clinical studies of this effect of prednisolone.

#### **Anticoagulant Activity of Anisindione**

The new anticoagulant anisindione (2-p-anisyl indandione-1,3) acts by depressing prothrombin formation. It is water soluble, tasteless and orally active. The usual induction dose is 500 mg. the 1st day, 300 mg. the 2nd day, none the

## **1 Aquasol A capsules are aqueous**

— far faster, more complete absorption of their water-solubilized vitamin A (up to 300% higher blood levels as compared with oily vitamin A).

## **2 Aquasol A capsules contain natural vitamin A for faster, better utilization.**

Natural vitamin A provides all physiologically active isomers of vitamin A. Synthetic vitamin A affords only one isomer requiring conversion in the body before it can be utilized in certain enzyme processes.

Why not use more effective, convenient Aquasol A capsules in acne, chronic eczemas, excessively dry skin and other hyperkeratotic lesions. Special processing of the natural vitamin A removes potential allergenic non-vitamin materials.

three separate high potencies of Aquasol A capsules (water-solubilized natural vitamin A)... per capsule:

**25,000 U.S.P. units    50,000 U.S.P. units    100,000 U.S.P. units**  
bottles of 100, 500 and 1000 capsules

Samples and literature available upon request

**u. s. vitamin corporation • PHARMACEUTICALS**

(Arlington-Funk Laboratories, division) 230 East 43rd Street, New York 17, N. Y.

3rd day, and 300 mg. the 4th day. Maintenance doses are quite uniform, usually 250 mg. every 3rd day being required. With this dose schedule, 25 patients were maintained at a prothrombin activity between 30 and 15 per cent for a total of 983 patient days; according to Doctors K. Lange, M. M. Mahl, E. Perchuk, and J. Enzinger.

The authors found that a smooth curve of hypoprothrombinemia was obtained with the recommended dosage. The activity was readily reversed within 2 hours by an intravenous injection of 50 to 100 mg. of an oil emulsion of vitamin K<sub>1</sub> oxide. Side reactions such as blood dyscrasias, liver damage, allergic reactions or chromaturia were not observed.

#### Serum Concentrations of B<sub>12</sub>

The study reported by Doctors W. P.

Boger, G. M. Bayne, S. C. Strickland, and L. D. Wright was directed toward the study of serum concentrations of vitamin B<sub>12</sub> in clinical states in which the depletion of the vitamin was of lesser degree than that causing hematologic or neurologic signs.

The normal serum concentration of the vitamin varied between about 200 and 1000 micro-micrograms, with an average of about 560 micro-micrograms. It was found that less than normal levels were present in the serum of subjects of advancing age and in pregnancy. Higher than normal levels were found in healthy newborn infants, in hepatitis, and in myelogenous leukemia. In uncomplicated diabetes the levels were similar to those noted in normal individuals. Low levels of serum vitamin B<sub>12</sub> may reflect reduction of total body

—Continued on page 145a

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ORIGINAL  
SYRUP  
COCILLANA  
COMPOUND**

# Cosanyl®

—contains dihydrocodeinone bitartrate\*

• delicious peach-like flavor

• especially valuable for dry, unproductive cough

in 2-ounce, 4-ounce, 16-ounce, and 1-gallon bottles



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MEDICAL TIMES

in bronchial asthma and respiratory allergies

specify the buffered "predni-steroids"  
to minimize gastric distress

*combined steroid-antacid therapy...*

'Co-Deltra' or 'Co-Hydeltra' provides all the benefits of "predni-steroid" therapy and minimizes the likelihood of gastric distress which might otherwise impede therapy. They provide easier breathing—and smoother control—in bronchial asthma or stubborn respiratory allergies.

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2.5 mg. or 5.0  
mg. of  
prednisone or  
prednisolone,  
plus 100 mg.  
of dried  
aluminum  
hydroxide gel  
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**Co-Deltra®**  
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DIVISION OF MERCK & CO., INC.  
PHILADELPHIA 1, PA.





Give your patient that extra lift with "Beminal" Forte 817



## MODERN THERAPEUTICS

—Continued from page 142a

reserves since the circulating concentrations are usually maintained at the expense of body stores. Elevated values showed some correlation with blood proteins capable of binding the vitamin.

### The Management of Constipation With a New Polyacrylic Resin

A new synthetic polyacrylic resin of the polycarboxylic type with hydrogen occupying the cation exchange position was used in the management of constipation in 37 bedridden patients and 37 ambulatory patients. The very high water-binding capacity of this resin led to its selection from among several resins.

In the report by Grossman, Batterman, and Leifer in *J. Am. Geriat. Soc.* [5:187(1957)], it was stated that 71 per cent of 31 bedridden patients receiving 4 Gm. of the resin a day showed improvement. Over a period of several days the fecal matter gradually softened and eventually spontaneous bowel movements were possible. Among 31 ambulatory patients receiving 0.9 to 1.0 Gm. of the resin 3 or 4 times a day 77 per cent showed improvement. Smaller doses were not effective in either group.

Signs of intolerance were negligible and there was no evidence of systemic toxicity even in a few patients given the resin continuously for periods of up to two years.

### Hexetidine in the Treatment of Vaginitis and Cervicitis

A new synthetic compound designated as hexetidine (bis-1,3-beta-ethylhexyl-5-



Give your patient that extra lift with "Beminal" Forte when high vitamin B and C levels are required.

"Beminal" Forte—each capsule contains:

Thiamine mononitrate (B <sub>1</sub> )	25.0 mg.
Riboflavin (B <sub>2</sub> )	12.5 mg.
Nicotinamide	75.0 mg.
Pyridoxine HCl (B <sub>6</sub> )	3.0 mg.
Calc. pantothenate	10.0 mg.
Vitamin C (ascorbic acid)	150.0 mg.
Vitamin B <sub>12</sub> with intrinsic factor concentrate	1/9 U.S.P. Unit

Improved formula

**"BEMINAL" Forte**  
with VITAMIN C

Dosage: 1 to 3 capsules daily, or more, depending upon the needs of the patient.

Supplied: No. 817—Bottles of 100 and 1,000 capsules.



AYERST LABORATORIES

New York, N. Y. • Montreal, Canada

methyl-5-amino hexahydropyrimidine) was used in the treatment of 327 patients with cervicovaginal infections of both bacterial and fungal origin. The compound was applied in a 0.5 per cent solution in polyvinylpyrrolidone or in a 0.1 per cent gel. Treatment was performed in the office by applying the solution on a cotton swab and on a tampon in the vaginal and cervical areas and left there for about 10 minutes. This was repeated every week or two. For other patients, a tube of the gel was given with instructions to apply an applicator full high in the vagina three times a week upon retiring. This was in addition to the office treatment.

Writing in *Antibiot. Med. & Clin. Ther.* [4:31(1957)], Hoefel *et al* reported that 93.6 per cent of the patients responded favorably. Clinical symptoms generally disappeared after 2 or 3 treatments. There were no instances of

local or systemic toxicity observed

### Otic Infections Treated with Biomydrin Otic

According to R. E. Votaw of St. Louis [*Eye, Ear, Nose & Throat Monthly*, 36:410(1957)] the preparations employed for the effective treatment of otic problems should be devoid of sensitizing properties, effective against many organisms without producing resistant strains, and should be easily administered by the patient at home. He believes that in the topical solution, Biomydrin Otic, he has found a satisfactory highly bactericidal agent for various types of ear infections. During the course of a year, 92 patients with acute and chronic types of otitis externa were treated with Biomydrin Otic with very favorable results. The itching and discomfort associated with dry scaly ear canals were promptly relieved. A

—Continued on page 148a

when anxiety and tension "erupts" in the G. I. tract...

## IN DUODENAL ULCER



# PATHIBAMATE\*

Meprobamate with PATHILON® Lederle

Combines Meprobamate (100 mg.) the most widely prescribed tranquilizer... helps control the "emotional overlay" of duodenal ulcer — without fear of barbiturate loginess, hangover or habituation... with PATHILON (25 mg.) the anticholinergic noted for its extremely low toxicity and high effectiveness in the treatment of many G.I. disorders.

Dosage: 1 tablet t.i.d. at mealtime. 2 tablets at bedtime.

Supplied: Bottles of 100, 1,000.

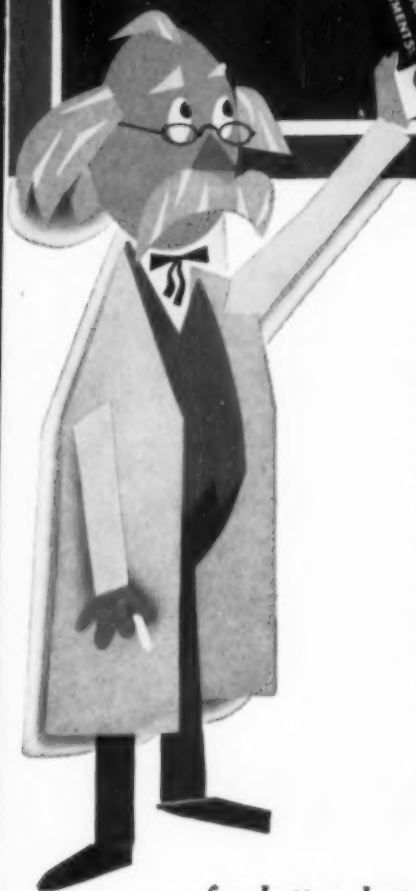


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... the rapid and prolonged topical anesthetic action of Xylocaine Ointment effectively manages pain, itching and burning. The anesthetic comes into immediate and intimate contact with the tissues because it is contained in a water-soluble, non-staining vehicle which readily melts at body temperature. It is nonirritating, nonsensitizing and does not interfere with the healing processes.



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*for better doctor-patient relationship*

**XYLOCAINE®**  
(brand of lidocaine<sup>®</sup>)

.....  
**OINTMENT 5% ASTRA**

## MODERN THERAPEUTICS

—Continued from page 144a

cotton pack or wick saturated with the solution is placed in the affected canal, and kept moist by the patient. The acute phase of the infection is cleared within a week. Many patients with the so-called "swimming ears" received prompt relief; they were instructed to instill Biomydrin Otic in both ears before and after swimming. The solution was used in patients with acute and chronic otitis media secondary to traumatic rupture of the drum, and also in chronic suppurative otitis media. In severe cases, systemic antibiotic therapy was used in conjunction with the solution. In the pre-operative preparation of chronic mastoiditis with foul discharge and aural polyps, these factors can be altered significantly by the application of Biomydrin Otic. If the

solution is used for four or more days prior to the operation, the external and middle ears are rendered more favorable for operative procedures. In twelve patients with radical mastoidectomy cavities, after the initial operative reaction had subsided, the use of Biomydrin Otic decidedly decreased secondary infection and the development of granulation tissue, and promoted quicker healing. The solution may be added to single-thickness, selvedged gauze packing in the cavity. Overall results from the use of Biomydrin Otic have been so favorable that the continued use seems warranted.

### Tuberculosis Patients Treated with Chlorpromazine

In the management of patients with pulmonary tuberculosis, the authors, Harry Shubin and his associates of Philadelphia [*International Record of*

—Continued on page 152a

when anxiety and tension "erupts" in the G. I. tract...

## IN ILEITIS



## PATHIBAMATE\*

Meprobamate with PATHILON® Lederle

Combines Meprobamate (400 mg.) the most widely prescribed tranquilizer . . . helps control the "emotional overjoy" of ileitis — without fear of barbiturate loginess, hangover or habituation . . . with PATHILON (25 mg.) the anticholinergic noted for its extremely low toxicity and high effectiveness in the treatment of many G.I. disorders.

Dosage: 1 tablet i.i.d. at mealtime. 2 tablets at bedtime.

Supplied: Bottles of 100, 1,000.



\*Trademark

® Registered Trademark for Tridihexethyl iodide Lederle

LEDERLE LABORATORIES DIVISION, AMERICAN CYANAMID COMPANY, PEARL RIVER, NEW YORK

*IN ORAL PENICILLIN THERAPY*

*Q. WHAT IS THE CRITERION  
FOR THERAPEUTIC SUCCESS?*

*A. A WELL PATIENT*

*PRESCRIBE*

**Pentids**

SQUIBB 200,000 UNIT BUFFERED PENICILLIN G POTASSIUM TABLETS

- *six years of experience with Pentids in millions of patients confirm clinical effectiveness and safety*
- *excellent results with 1 or 2 tablets t.i.d. for many common bacterial infections*
- *may be given without regard to meals*
- *economical...Pentids cost less than other penicillin salts*

**Just 1 or 2 tablets t.i.d.** Bottles of 12, 100 and 500

**NEW! PENTIDS FOR SYRUP.** Orange flavored powder which, when prepared with water, provides 60 cc. of syrup with a potency of 200,000 units of penicillin G potassium per 5 cc. teaspoonful.

*Also available: Pentids Capsules, Pentids Soluble Tablets, Pentid-Sulfas.*

**SQUIBB**



*Squibb Quality—the Priceless Ingredient*

\*PENTIDS® IS A SQUIBB TRADEMARK

# Combined Estrogen-Androgen Therapy Improves Prognosis in Osteoporosis

## Also Prevents Postpartum Breast Engorgement

**I**n aging patients gonadal decline frequently impairs bone matrix formation leading to osteoporosis. Combined estrogen-androgen therapy promotes physiologic reconstitution of bone and lessens the risk of fractures.

Complaints of "low back pain," weakness, or rounding of the shoulders may be the first symptoms of osteoporosis. X-ray examination will not usually reveal changes in bone density until about 30 per cent of the normal calcium content is depleted.<sup>1</sup> A recent J.A.M.A. editorial states that in senile and postmenopausal osteoporosis superior results are usually obtained with combined estrogen-androgen therapy.<sup>2</sup>

"Premarin"® with Methyltestosterone provides the osteoblastic stimulating properties of estrogen together with the anabolic or protein forming action of androgen. Together, the two steroids have a greater effect on bone and protein metabolism than either alone. In a matter of weeks to months, skeletal pain may be relieved substantially or completely. The patient usually gains weight and experiences a general feeling of well-being.

### P. P. B. E. Prevented

#### by Dual Steroid Therapy

"Premarin" with Methyltestosterone effectively prevents postpartum breast engorgement because of the inhibitory effect of the two steroids on the pituitary lactogenic hormone, as confirmed in the clinical work of Wilson.<sup>3</sup>

Fiskio<sup>4</sup> also reported that "Premarin" with Methyltestosterone effectively relieved postpartum breast engorgement and suppressed lactation in 96.2 per cent of his group of 267 patients. Postpartum depression was notably absent and none of the patients showed symptoms of nausea, vomiting, breast abscess, excessive lochia, or withdrawal bleeding.

**RECOMMENDED DOSAGES:** (Directions refer to yellow tablets).

*Osteoporosis:* 2 tablets daily, for the first three weeks; then 1 tablet daily thereafter.

In the female, it is suggested that combined therapy be given in 21 day courses with a rest period of about one week between courses, and be continued for 6 to 12 months; following this period, the patient may be maintained with cyclic therapy employing "Premarin" Tablets alone.

In the male, a careful check should be made on the status of the prostate gland in protracted therapy.

*Postpartum breast engorgement:* short duration therapy—1 week; 3 tablets every 4 hours for 5 doses—then 2 tablets daily for rest of week. "Stepdown" therapy—10-15 days; 1st day—4 tablets; 2nd day—3 tablets; 3rd day—2 tablets, thereafter, 1 tablet daily for 10-15 days. In either schedule, therapy should be started as soon as possible after delivery.

*Climacteric* (female in certain cases): 1 or 2 tablets daily in 21 day courses followed by a rest period of five to seven days.

**SUPPLIED IN TWO POTENCIES:** the yellow tablet contains 1.25 mg. of conjugated estrogens, equine ("Premarin") and 10 mg. methyltestosterone; the red tablet contains 0.625 mg. and 5 mg. respectively. Both potencies are available in bottles of 100 and 1,000 tablets.

*Bibliography:* furnished on request.

**AYERST LABORATORIES**  
New York, N. Y. • Montreal, Canada



Left—Femur shows typical fracture  
in osteoporotic bone

Right—Normal bone structure

## Premarin<sup>®</sup> with Methyltestosterone

IMPROVES THE PROGNOSIS IN OSTEOPOROSIS

"Premarin" with Methyltestosterone utilizes the complementary action of estrogen-androgen therapy on bone and protein metabolism. Estrogen stimulates osteoblastic activity while androgen exerts an anabolic or protein-forming action. Thus osteoporotic bone is rendered less susceptible to fracture. The risk of untoward reactions is minimized because the two steroids exert an opposing action on sex-linked tissue.

AYERST LABORATORIES • NEW YORK, N. Y. • MONTREAL, CANADA



*"MEDIATRIC" will promote better health and vigor when the patient complains of . . . easy fatigability . . . loss of appetite . . . general malaise*

These symptoms may be the first signs of degenerative changes in patients over 40. "Mediatric" supplies small doses of estrogen and androgen, important dietary supplements and a mild antidepressant to forestall or even correct the "damage" of premature aging.

"Mediatric" — steroid-nutritional compound, available in tablets, capsules and liquid.



Ayerst Laboratories • New York, N. Y. • Montreal, Canada

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# Steroid-Nutritional Therapy Is Constructive Approach for the First Signs of Aging

## Emphasis on Early Treatment Before "Damage" Is Done

*The first subtle suggestions of physiologic deterioration should not be dismissed if serious somatic and metabolic disorders are to be avoided. Prompt institution of steroid-nutritional therapy may forestall and even reverse premature "damage" and help prolong the active life of the patient.*

Some of the most common symptoms of declining gonadal function and nutritional insufficiency are vague pains in the bones and joints, easy fatigability, decreased muscular tone, loss of appetite, chronic mental fatigue and general malaise. In older patients, these complaints are frequently indicative of degenerative processes when they cannot be attributed to a specific cause.

The comprehensive formula of "Mediatric" is specifically designed to provide three therapeutic services: 1. protect general metabolic integrity; 2. preserve physiologic efficiency; 3. prevent premature damage.

"Mediatric" supplies estrogen and androgen in small quantities to help maintain important metabolic functions, dietary supplements to ensure adequate nutrition, and a mild antidepressant to elevate the mood.

**Recommended dosages:** Male — 1 tablet or 1 capsule (or 3 teaspoonfuls) daily, or as required. Female — 1 tablet or 1 capsule (or 3 teaspoonfuls) daily, or as required, taken in 21 day courses with a rest period of one week between courses.

Bibliography on request.

### "MEDIATRIC"® Tablets and Capsules

Each capsule or tablet contains:

Conjugated estrogens equine

("Premarin"®) ..... 0.25 mg.

Methyltestosterone ..... 2.5 mg.

Vitamin C (ascorbic acid) ..... 50.0 mg.

Thiamine mononitrate (B<sub>1</sub>) ..... 5.0 mg.

Vitamin B<sub>12</sub> with intrinsic

factor concentrate ..... 1/6 U.S.P. Unit

Folic acid U.S.P. .... 0.33 mg.

Ferrous sulfate exsic. .... 60.0 mg.

Brewers' yeast (specially processed) 200.0 mg.

d-Desoxyephedrine HCl ..... 1.0 mg.

Tablets—No. 752—bottles of 100 and 1,000.

Capsules—No. 252—bottles of 30, 100, and 1,000.

### "MEDIATRIC" Liquid

Each 15 cc. (3 teaspoonfuls) contains:

Conjugated estrogens equine

("Premarin"®) ..... 0.25 mg.

Methyltestosterone ..... 2.5 mg.

Thiamine HCl (B<sub>1</sub>) ..... 5.0 mg.

Vitamin B<sub>12</sub> ..... 1.5 mcg.

Folic acid U.S.P. .... 0.33 mg.

d-Desoxyephedrine HCl ..... 1.0 mg.

Contains 15% alcohol

No. 910—bottles of 16 fluidounces and 1 gallon.

AYERST LABORATORIES

New York, N. Y. • Montreal, Canada

## MODERN THERAPEUTICS

—Continued from page 148a

*Medicine*, 170:369(1957)], stress the mental difficulties involved. The nature of the disease demands a relatively long period of inactivity for the body, during which time emotional and psychic energy accumulates, and tensions and irritability increase. The healing process is delayed by the increased emotional stresses augmented by worry about family and job. Being aware of the tranquilizing qualities claimed for chlorpromazine, the authors decided to study its effects on hospitalized patients with pulmonary tuberculosis, all of whom constituted "management problems." Eighty-two patients were in the group: 45 received chlorpromazine, the remainder were given a placebo. The dosage was 25 mg. three times daily,

and the period of observation averaged five months. Of the chlorpromazine-treated patients, the results were negligible in 13 per cent, moderate improvement was seen in 67 per cent, and marked improvement in 15 per cent. Drowsiness occurred in a few instances but subsided without withdrawal of the drug, also, one case of jaundice cleared spontaneously. Two main points emerge from the findings: (1) Chlorpromazine is a useful adjunct in managing tuberculous patients, who, because of emotional distress, approach treatment with an attitude that is not conducive to successful rehabilitation. There was no doubt of its utility when the favorable results were contrasted with those patients who had received placebos. (2) No noticeable change in the therapeutic effect of antituberculous drugs was seen with the added use of chlorpromazine.

—Continued on page 152a

**ROUND  
THE  
CLOCK**

**Freedom from Acidity**

during  
**WORK, SLEEP or PLAY**

for the patient with  
**PEPTIC ULCER and  
FUNCTIONAL HYPERACIDITY**

**TRI-GEL-MA®**  
TABLETS  
with **MESCOMINE NITRATE**  
(BUFFINGTON'S)

Non-systemic and non-constipating anticholinergic, anti-acid and adsorbent. The addition of Mescomine makes it possible to effectively suppress acid secretion over prolonged periods . . . extends intervals between doses . . . eliminates the need for supplemental nocturnal medication.

Contains Mescomine (scopolamine methyl nitrate) magnesium trisilicate, concentrated aluminum hydroxide gel.



**BUFFINGTON'S, INC.**  
Worcester 8, Mass., U.S.A.

Write for descriptive literature and professional samples.

in  
hay  
fever



# Novahistine®

**gives greater relief than antihistamines alone  
...and avoids misuse of topical agents**

**Novahistine taken orally  
checks excessive irritant secretions  
and "unlocks" the closed-up nose**

In the management of hay fever and other seasonal allergies...as well as the common cold...the distinctly additive action of a vasoconstrictor (phenylephrine HCl) combined with an antihistaminic drug (prophenpyridamine) produces a higher degree of relief than either drug given alone.

...eliminates patient misuse of nose drops, sprays and inhalants...avoids the risk of rebound congestion, mucosal damage, and ciliary paralysis. Novahistine will not cause jitters or insomnia...will not depress the appetite.

Each Novahistine Tablet or teaspoonful of Elixir provides 5.0 mg. of phenylephrine HCl and 12.5 mg. of prophenpyridamine maleate. For more potent nasal decongestion, Novahistine Fortis Capsules provide twice the amount of phenylephrine.

**and, when headache is present...NOVAHISTINE with APC**

—each capsule contains:

phenylephrine 10 mg., prophenpyridamine 12.5 mg.,  
acetylsalicylic acid 225 mg. (3½ gr.), acetophenetidin  
150 mg. (2½ gr.), and caffeine 32 mg. (½ gr.)

**Pitman-Moore Company • Division of Allied Laboratories, Inc., Indianapolis 6, Indiana**

*As with mother's milk . . .*

## Vitamins and Minerals

S-M-A contains all the vitamins and minerals known to be required by normal infants—in amounts more than adequate to meet the recognized needs of health and growth.

S-M-A is protected by processing techniques that preserve all these essential factors.



154a

*for sound infant nutrition*

# **S-M-A<sup>®</sup>**

Concentrated Liquid  
Instant Powder



Philadelphia 1, Pa.

MEDICAL TIMES

*As with mother's milk . . .*

## Carbohydrate

As with breast milk, S-M-A provides  
true *physiological* carbohydrate  
as the natural carbohydrate for infants.  
S-M-A has no vegetable sugar.  
Its only carbohydrate is lactose—  
the sugar of milk. In amount also,  
S-M-A carbohydrate (7%) is closely adjusted  
to the average quantity in human milk.



# **S-M-A<sup>®</sup>**

Concentrated Liquid  
Instant Powder



Philadelphia 1, Pa.

*for sound infant nutrition*

(Vol. 85, No. 9) September 1957

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*As with mother's milk . . .*

## Fatty Acids

Modern studies increasingly relate normal infant metabolism to the dietary content of essential unsaturated fatty acids. Like human milk, S-M-A fat is high in essential unsaturated fatty acids, and supplies in full the calories required of fat in the diet. Its fatty acid pattern closely parallels that of mother's milk.



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# **S-M-A<sup>®</sup>**

Concentrated Liquid  
Instant Powder

*for sound infant nutrition*



Philadelphia 1, Pa.

MEDICAL TIMES

*As with mother's milk...*

## Proteins

---

S-M-A contains 1.5 per cent protein,  
and adequately satisfies  
the baby's daily requirement  
for protein.

The important elements in milk protein  
are the amino acids. S-M-A agrees closely  
with human milk in its content  
of these essential substances.

S-M-A protein is complete and adequate.



*for sound infant nutrition*

# **S-M-A<sup>®</sup>**

Concentrated Liquid  
Instant Powder



Philadelphia 1, Pa.

**An Evaluation of Suvren**

The authors, G. J. Sarwer-Foner and his associates of Montreal [*Canadian Medical Association Journal*, 76:933 (1957)] wished to conduct their own investigation of Suvren, a new sedative which had been reported as being a completely safe agent which did not potentiate barbiturates and other hypnotics, and did not possess hypnotic effects. It is believed to be a potent spasmolytic with a relaxant effect on smooth muscles, mainly those of the bronchi, gastrointestinal tract, ureters, biliary system, and blood vessels. Two groups of patients were studied; the 18 individuals in Group I were markedly affected; the 20 in Group II required a mild daytime sedative. All medication was given orally in 50-mg. tablets. The patients in Group I received 150 to 400 mg. daily in divided doses, and were treated from 12 to 44 days; those in the other group were given from 150 to 500 mg. daily for periods from 12 to 150 days. The manufacturers' statement that this drug was not indicated for modification of emotions or behavior of extremely agitated or disturbed patients was borne out. Pharmacologically this agent was not powerful enough, at least in recommended doses, to modify behavior significantly. It is worthy of note, however, that in the groups observed, evidence of sedative effect was shown in 29 of 38 patients. This study highlighted the difficulties in measuring the physiological activity of a mild sedative preparation, especially one without hypnotic effects. The drug seems to

—Continued on page 160a

*Dr. Jones—  
incidence of sensitivity!*

**"Skillful use  
of Iodides may**

R<sub>x</sub>

R<sub>x</sub>

R<sub>x</sub>

\*R<sub>x</sub> 1 OZ. ORGANIDIN SOLUTION  
Sig: Increase to 20 drops four times daily.

This preparation is better tolerated than  
solution of potassium iodide.

\* The use of iodides in asthma (Alvin Seltzer,  
M. D. George Washington University) M.  
Ann. District of Columbia 26: 17-19, 1957.



*did you see this? Astonishingly low  
Let's try Organidin on our asthmatics—  
especially the resistant cases.*

# alleviate **Asthma** even after other medications have failed\*

New assurance of success in iodide therapy for asthma results from focusing attention on 1) common pitfalls in the use of iodides; 2) simple measures for avoiding the pitfalls, and 3) variations in action of iodide preparations.

ORGANIDIN (organic iodine) minimizes gastric irritation and bad taste, thereby insuring patient cooperation . . . In this connection, the accompanying study of inorganic iodide and ORGANIDIN is significant.

## RESULTS OF TESTS ON HUMAN SUBJECTS SHOWING COMPARATIVE TOLERANCE OF INORGANIC IODIDE SOLUTION AND ORGANIDIN BY ORAL ADMINISTRATION AT CORRESPONDING IODINE LEVELS

INORGANIC IODIDE SOLUTION					ORGANIDIN				
NO. OF SUBJECTS	DOSE IN CC. 3 TIMES DAILY	DURATION OF DOSEAGE IN DAYS (AVERAGE)	NO. OF SUBJECTS WITH SYMPTOMS	SYMPTOMS	NO. OF SUBJECTS	DOSE IN CC. 3 TIMES DAILY	DURATION OF DOSEAGE IN DAYS (AVERAGE)	NO. OF SUBJECTS WITH SYMPTOMS	SYMPTOMS
4	0.09	13	3	Nausea	9	1.0	30	1	Palpitation slightly at night
			3	Vomiting				1	Slight skin rash
			2	Diarrhea				None	None
4	0.26	13	1	Abdominal cramps	3	2.1	30	None	None
			1	Nasal catarrh	3	2.7	30	None	None
4	0.54	6	2	Nausea	4	3.6	30	None	None
			2	Diarrhea					
			1	Slight skin rash					
5	0.72	6½	3	Diarrhea					
			1	Nasal catarrh					

### SUMMARY

Total No. of subjects . . . 17  
No. of instances in which untoward symptoms were reported by the 17 subjects . . . 10

### SUMMARY

Total No. of subjects . . . 19  
No. of instances in which untoward symptoms were reported . . . 3

\*Perspiration, nervousness, impaired or improved appetite, frequency of urination, polydipsia and diuresis were considered, but nothing marked was found. The subjects diluted the doses of Inorganic Iodide Solution and Organidin in a third of a glass of water, taken approximately one half hour after meals.

†Slaughter, D., South Dakota J. Med. and Pharm., 1, 425 (Nov.), 1948.

sample and  
literature  
on request

# rganidin®

100-PROPYLIDINE GLYCEROL

another new  
approach by...

## Wampole

LABORATORIES Henry K. Wampole & Co., Incorporated,  
Philadelphia

- \* SOLUTION—30 cc. dropper bottles
- \* TABLETS—bottles of 100
- \* CAPSULES—bottles of 30

in any kind of  
motion sickness

## Dramamine®

brand of dimenhydrinate



“Dramamine (Searle) is still the most popular because of its lack of side reactions and almost no contraindications to its use. It acts both as a preventive and a cure for seasickness or motion sickness. Rectal administration proved as effective as oral administration for those who could not retain the . . . [tablet] when given orally.”

Rehfuss, M. E., and Price, A. H.: *A Course in Practical Therapeutics*, ed. 3, Baltimore, The Williams & Wilkins Company, 1956, p. 534.



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## MODERN THERAPEUTICS

—Continued from page 158a

show a cumulative effect, its action being evident by the fifth to seventh day, although the best effect in some cases may be seen after 20 days. Suvren has a place as an adjuvant to psychotherapy for psychiatric patients in whom a mild daytime sedative with no hypnotic effects is indicated. It is a useful drug with no appreciable hypnotic effects, no known toxicity, and relatively few and mild side-effects.

### Parkinsonism Treated with Procyclidine Hydrochloride

Procyclidine hydrochloride (Kemadrin) has recently been added to the therapeutic armamentarium for the treatment of Parkinsonism, and the authors, A. Zier and L. J. Doshay of New York City [*Neurology*, 7:485 (1957)] report their observations on its use. The group treated was comprised of 108 parkinson and eight non-parkinson patients who had failed to respond to appropriate treatment. The beginning dosage of Kemadrin was 2.5 mg. three times daily; this was increased to maximum tolerance. The maintenance dosage was 5 or 10 mg. three times daily. The drug is best administered after meals and avoided at bedtime. Results were based on reports from the patient and his family as well as on clinical observation. A patient was regarded as improved if one or more of the cardinal symptoms of Parkinsonism showed improvement and lasted for at least one month. The results with procyclidine therapy were highly gratifying. Of the 108 parkin-

—Continued on page 162a

MEDICAL TIMES

**effective vulvovaginal therapy**

## **trichotine®**

**a detergent . . . a bactericide and fungicide . . .**

**an antipruritic . . . an aid to epithelization . . .**

**an aesthetic and psychosomatic adjunct**

Trichotine douches — incorporating the multiple advantages of sodium lauryl sulfate with the recognized values of other specific or adjunctive agents — may be prescribed as often as required in cases of nonspecific vaginitis and leukorrhea, subacute and chronic cervicitis, senile vaginitis, trichomoniasis, and moniliasis; hot packs are often quickly effective in pruritus vulvae.

*Concentrated solutions are useful for clean-up or swab treatment in the physician's office.*

## **VACID**

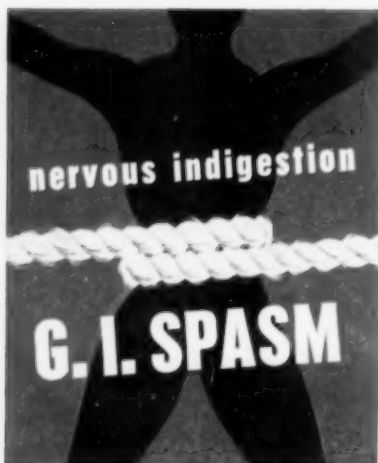
***the 24-hour vaginal pH stabilizer***

The therapeutic value of continual maintenance of normal vaginal pH (4.0 to 4.5) is widely recognized in the treatment of monilial, trichomonal, and nonspecific bacterial infections and in cervicitis.

One Vacid insert suppository will hold the pH of the vagina at the normal physiologic level for 24 hours. Symptomatic relief is noted usually the first day and progressive improvement continues until Doderlein bacilli replace the infecting organisms — usually within 7-14 days.

*Samples and literature on request . . . Full details in PDR.*

**The Fesler Co., Inc.** Stamford, Conn.



## Convertin®-H

*Fortified Digestive Enzymes*  
**WITH ANTISPASMODIC**

Convertin-H fortifies gastric and pancreatic enzymes to aid digestion, and supplies an effective antispasmodic to combat the spasm.

**Composition:**

Each Convertin-H tablet contains:

**In sugar-coated outer layer**

Homatropine Methylbromide . . . 2.5 mg.  
Betaine Hydrochloride . . . 130.0 mg.  
(providing 5 minims diluted Hydrochloric Acid U.S.P.)  
Oleoresin Ginger . . . 1/600 gr.

**In enteric-coated inner core**

Pancreatin (4 x U.S.P.) . . . 62.5 mg.  
(equiv. to Pancreatin U.S.P. 250 mg.)  
Desoxycholic Acid . . . 50.0 mg.

**Dose:** 1 or 2 tablets with or just after meals.

**Supplied:** In bottles of 84 and 500 tablets.

*send for samples*



**B. F. Ascher & Co., Inc.**

*Ethical Medicinals*

KANSAS CITY, MO.

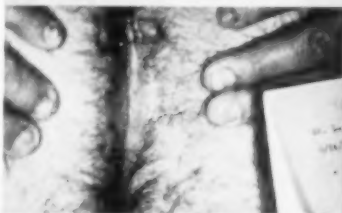
## MODERN THERAPEUTICS

—Continued from page 160a

sonian patients, 57 per cent responded favorably. The drug afforded striking results in six of eight non-parkinson dyskinesia cases, and one of them improved so much in the course of six weeks that he was able to carry on successfully without further medication. Procyclidine was found to be better tolerated by and of greater benefit to arteriosclerotic than to post-encephalitic patients. It proved efficacious in the control of rigidity, tremor, akinesia, fatigue, weakness, and mental depression. A number of patients noted a feeling of general well-being. Of the 116 cases, 42 patients were maintained on procyclidine alone and 74 received

—Continued on page 164a

**in anogenital pruritus**



and many other skin disorders

use new **Vioform®**  
**Hydrocortisone**  
**Cream**

antibacterial  
antifungal  
anti-inflammatory  
antipruritic

Tubes of 5 and 20 Gm.

VIOFORM® (hydrocortisone 250 mg. CIBA)

**C I B A** SUMMIT, N. J.

*See page following 102a  
for actual clinical demonstration*



**Predictable hypotensive effect—orally**

# INVERSINE®

MECAMYLAMINE HYDROCHLORIDE

INVERSINE is chemically different from the quaternary ammonium ganglionic blockers, and orally is completely absorbed. This ensures a predictable, reproducible and lasting hypotensive response—tomorrow's dose of INVERSINE will bring about the same reduction of blood pressure as today's. "This drug is completely absorbed when given by mouth and has such a gradual onset and offset of action that a continuous and effective level of blockade can readily be achieved..."<sup>1</sup>

Reference: 1, J. Michigan Soc. 55:154 (Feb.) 1956.

Dosage: Initial dose, 2.5 mg. twice daily, increased by 2.5 mg. at 2-day intervals. Average daily dose 25-30 mg.

Supplied: 2.5 mg. scored tablets and 10 mg. quarter-sected tablets in bottles of 100.

INVERSINE IS A TRADEMARK OF MERCK & CO., INC.



**MERCK SHARP & DOHME**

DIVISION OF MERCK & CO., INC., PHILADELPHIA 1, PA.

## MODERN THERAPEUTICS

—Continued from page 162a

other antiparkinson preparations in addition. Kemadrin combines readily with other drugs. Also, another factor in its favor is patient acceptance. Side-effects were similar to those encountered with other antiparkinson agents, but were milder. A significant observation was the fact that the drug is well tolerated by members of the older age groups. While the authors do not call Kemadrin a panacea, they believe it to be a worthy addition to the therapy of Parkinsonism and other conditions with abnormal movements. It afforded relief to many patients who had failed to respond to other medication; it exerts action against all symptoms of Parkinsonism and, therefore, may be employed when commencing treatment with patients.

### Preoperative Sedation with Meproamate

Especially in cases of apprehensive and agitated adults and children undergoing surgical procedures in the doctor's office, the author, E. C. Kern of Montclair, New Jersey [*Eye, Ear Nose & Throat Monthly*, 36:403 (1957)], refers to the problems as well as to expenditure of time required to deal with these emotional situations. In searching for a means of handling these patients without resorting to strong hypnotics, meproamate (Miltown) seemed worthy of a trial. The drug was employed with more than 300 patients undergoing surgery in the office for the eye, ear, nose, or throat. Apprehensive patients became calm and cooperative within

—Continued on page 166a

BORDEN'S PRESCRIPTION PRODUCTS DIVISION  
350 MADISON AVENUE, NEW YORK 17

## Strict avoidance of cow's milk by potentially allergic infants may prevent "allergic cripples"

The prenatal predictability of infant milk allergy is suggested by Ratner<sup>1</sup> who states—"There is a greater susceptibility to allergy in children born of highly allergic families"—and by Collins-Williams<sup>2</sup> who has observed that allergy "tends to affect subsequent children."

A child with "at least one allergic parent or sibling" has been defined by Glaser<sup>3</sup> as "potentially allergic." His clinical experience indicates that, for such children, prophylactic artificial feeding of a hypoallergenic alternative to cow's milk, *from the moment of birth* through approximately nine months, prevents milk allergy during infancy, reduces incidence of major allergy in later childhood, and usually permits tolerance of cow's milk after immunologic maturity is attained.

### In summary:

1. Prenatally...look for familial allergic history.
2. Avoid cow's milk entirely in artificial feeding of potentially allergic infants.
3. Choose MULL-SOY<sup>®</sup> for effective prophylaxis and sound nutrition.



1. Ratner, B.: New York J. Med. 56:1501, 1956.  
2. Collins-Williams, C.: Ann. Allergy 13:415, 1955. 3. Glaser, J.: J.A.M.A. 153:620, 1953.

COW'S MILK ALLERGY IN INFANTS



**PREDICTABLE\***  
**PREVENTABLE**  
**MULL-SOY®**

whenever prenatal examination reveals familial history of allergy (in either parent or a sibling)

with



...when fed from birth, allergic or potentially allergic infants are usually free from allergic symptoms...and future allergic cripples are avoided.

MULL-SOY...pioneer hypo-allergenic alternative to cow's milk...now even better in palatability, lighter color, freedom from loose stools, in promoting normal growth and development. Easily digested and assimilated, free of added potential allergens, high in unsaturated fatty acids.



MULL-SOY • BREMIL • DRYCO • BETA LACTOSE • KLIM  
products of BORDEN'S PRESCRIPTION PRODUCTS DIVISION, 350 Madison Ave., New York 17

\*A comprehensive bibliography on cow's milk allergy is available to interested physicians.

## MODERN THERAPEUTICS

—Continued from page 164a

twenty or thirty minutes; very few required additional sedation. Local anesthesia could be reduced slightly, and the waiting period for the anesthetic to become effective was usually shortened. After the operation, syncope was not present when assuming an upright position and there was no need to detain the patient for prolonged periods. In a few instances there seemed to be a potentiation of effect resulting from an antihistaminic and Miltown, and it was considered advisable to omit such agents when meprobamate was used. Among the pharmacologic properties of Miltown it has been shown to have a selective action on the thalamus producing

quieting effects. A secondary muscle relaxant property, with effect on the voluntary muscle only, has also been established. Autonomic functions are not affected; cardiovascular, respiratory and gastric secretory mechanisms are not disturbed. Miltown becomes effective within twenty to thirty minutes with the effect lasting approximately six hours. The drug is readily absorbed from the gastrointestinal tract, and does not produce nausea or vomiting. Toxicity has been found to be extremely low, and untoward reactions are rare. The drug gives evidence of being an excellent agent for preoperative sedation, especially in office surgical procedures.

### Bendectin in Nausea of Pregnancy

The use of Bendectin in 205 patients for control of nausea and vomiting associated with pregnancy and motion sickness is reported on in *The Ohio State Medical Journal* [53:665, (June) 1957]. Because of a special delayed-action tablet coating, the medication was given at bedtime. The drug was released during sleep to control early morning distress of pregnant patients.

Duration of Bendectin therapy varied from a few days to 180 days. Complete symptomatic relief was obtained in 179 of the 205 patients and in 25 there was control of vomiting but nausea occasionally persisted. Two hundred of the cases reported were pregnancies. In 88 there was a history of nausea and vomiting during a previous pregnancy. All but one of these women reported more satisfactory relief from Bendectin than from medication used during previous pregnancy.

—Continued on page 168a

in chronic  
eczematous dermatitis



and many other skin disorders  
use new **Vioform-<sup>®</sup>**  
**Hydrocortisone**  
**Cream**      antibacterial  
antifungal  
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Tubes of 5 and 20 Gm.  
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**C I B A** SUMMIT, N. J.      6/24/59

See page following 102a  
for actual clinical demonstration





who coughed?

*whenever  
cough therapy  
is indicated*

# Hycodan<sup>®</sup>

(Dihydrocodeinone with Homatropine Methylbromide)

Relieves cough quickly  
and thoroughly  
Effect lasts up to six hours  
permitting a comfortable  
night's sleep  
Controls useless cough without  
impairing expectoration  
Rarely causes constipation

## *Syrup and oral tablets*

Each teaspoonful or tablet of  
HYCODAN<sup>®</sup> contains 5 mg.  
dihydrocodeinone bitartrate and  
1.5 mg. Mesopin (homatropine  
methylbromide).

Average adult dose:  
One teaspoonful or tablet after  
meals and at bedtime. May  
be habit-forming. Available  
on your prescription.

**Endo<sup>®</sup>**

Literature? Write

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## MODERN THERAPEUTICS

—Continued from page 166a

### Elixophyllin in Acute Asthmatic Attacks

A single oral dose of 5 tablespoons (75 cc.) of the new hydro-alcoholic solution of theophylline (Elixophyllin, Sherman) "is effective in terminating severe acute asthmatic attacks" in 15-20 minutes, Aaron D. Spielman, M.D., New York allergist, reports in a recent issue of *Annals of Allergy*. Fifty patients, 20 of them with acute asthma, and 30 with chronic asthma, were selected for the study.

Dr. Spielman found further that the vital capacity of the 20 patients with acute attacks increased an average of 14% in the first five minutes after the Elixophyllin dosage with progressive increases up to 39% in thirty minutes.

Clinical response was classed as excellent in 14 patients and good in the remaining 6.

In treating the chronic asthmatics, smaller doses (30-45 cc.) were used three times daily, with excellent to good response in 27 of the 30 cases. In most of these patients relief was greater than during a control period of medication with theophylline-equivalent doses of aminophylline—a result the allergist feels "would appear to be related to the sustained higher theophylline blood levels which Elixophyllin produces."

He comments on "the faster and more efficient absorption of theophylline from the gastrointestinal tract" after administration of Elixophyllin, and observes that this oral medication produces the same results as intravenous aminophylline. For patients subject to sudden acute attacks, the investigator reminds

—Continued on page 170a



choice salt substitute in a pinch...

and in any low-salt diet you prescribe

# DIASAL®

salt without sodium

looks like salt...  
tastes like salt...  
flavors food like salt

DIASAL, containing potassium chloride, glutamic acid and inert ingredients, is supplied in 2-ounce shakers and 8-ounce bottles.

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Kapsels<sup>™</sup>  
mineral-vitamin-hormone supplement

helps combat the aging complex **now**  
to foster good health and usefulness **later**

- vitamins and minerals to help maintain cellular function
- enzymes to aid digestion
- amino acids to help maintain nitrogen balance
- steroids to stimulate metabolism

\*Freeman, J. T.: Features of Gerontology's Clinical Future, J.A.M.A. 161:948, 1956.



PARKE, DAVIS & COMPANY - DETROIT 32, MICHIGAN



## MODERN THERAPEUTICS

—Concluded from page 168a

that this medication has much to recommend it not only because it can be taken by the patient at home but also because "the intravenous administration can be eliminated in the majority of patients and the dangers incident thereto avoided." He also notes the remarkable freedom from "the distressing gastrointestinal side effects seen when high doses of aminophylline are given."

### **Celontin in the Treatment of Mixed Epilepsy**

Celontin is one of the newer drugs for the treatment of epilepsy. Its action in cases of petit mal and psychomotor epilepsy have been reported upon favorably. However, since no studies had appeared in the literature in connection

with institutionalized patients, the authors, C. H. Carter and M. C. Maley [*Neurology*, 7:483(1957)] studied the effects of Celontin when administered to a group of patients in the Florida Farm Colony at Gainesville. The patients' records had been kept carefully for one year before commencing the administration of Celontin. Since therapeutic effect and tolerance varies from patient to patient, the dosage was individualized, but all patients received 0.3 to 1.8 Gm. in daily divided doses initially. The group studied consisted of 16 patients with grand mal, petit mal, and psychomotor seizures occurring either singly or in combination. As a result of Celontin, 15 of the patients showed a reduction in both grand mal and petit mal attacks. The eight patients suffering from psycho-

—Concluded on page 172a

in infectious  
eczematoid dermatitis



and many other skin disorders  
use new **Vioform-<sup>®</sup>**  
**Hydrocortisone**  
**Cream**      antibacterial  
antifungal  
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antipruritic

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**C I B A** SUMMIT, N. J.

See page following 102a  
for actual clinical demonstration

## *Diagnosis, Please*

### ANSWER

(from page 25a)

### **Pulmonary Osteoarthropathy**

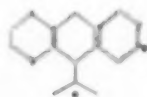
Note diffuse periosteal thickenings of lower end of humerus and of the radius and ulna in a patient with chronic bronchiectasis.

- over 10 million patients  
treated in the United States
- over 6700 articles published  
throughout the world

# THORAZINE<sup>\*</sup>

chlorpromazine, S.K.F.

one of the fundamental drugs in medicine



\*T.M. Reg. U.S. Pat. Off.

## MODERN THERAPEUTICS

—Concluded from page 170a

motor epilepsy showed a substantial reduction in attacks almost amounting to complete control. Results for all patients taken together indicated that the monthly seizure rate was reduced from 1,107 to 343 in the case of grand mal and from 389 to 148 in the case of petit mal. The only side-effect was drowsiness experienced by five patients; this disappeared when the dosage was reduced.

Celontin appears to be an effective drug in the control of petit mal, grand mal, and psychomotor epilepsy.

BUY U.S. SAVINGS BONDS

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and many other skin disorders

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C I B A SUMMIT, N. J. 2/24208B

See page following 102a  
for actual clinical demonstration

Whatever else you try  
*you too will*  
*return to*

**gentia-jel<sup>®</sup>**  
*for monilial vaginitis*

it works when others fail

0.1% gentian violet vaginal anti-infective in acid polyethylene glycol base.  
12 single dose disposable plastic applicators.

*Winstar*

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# Rauwiloid®

## A Dependable Antihypertensive

"... by far the most effective

and useful orally administered agent for reducing blood pressure... fully worthy of a trial in every case of essential hypertension in which treatment is thought necessary. The severe cases, which always need treatment, are as likely to respond as the mild."<sup>1</sup>

1. Locket, S.: Brit. M.J.  
1:809 (Apr. 2) 1955.

## An Effective Tranquilizer, too

"... relief from anxiety resulted in generally increased intellectual and psychomotor efficiency with a few exceptions."<sup>2</sup> Rauwiloid is outstanding for its *nonsoporific* sedative action in a long list of diseases burdened by psychic overlay.

2. Wright, W.T., Jr., et al.: J. Kansas  
M. Soc. 57:410 (July) 1956.

**Dosage:** Merely two 2 mg. tablets at bedtime.  
After full effect one tablet suffices.

## A logical first step when more potent drugs are needed

Rauwiloid is recognized as basal medication in all grades and types of hypertension. In combination with more potent agents it proves synergistic or potentiating.

### Rauwiloid® + Veriloid®

In moderate to severe hypertension this single-tablet combination permits long-term therapy with dependably stable response. Each tablet contains 1 mg. Rauwiloid (alseroxylon) and 3 mg. Veriloid (alkavervir). Initial dose, 1 tablet t.i.d., p.c.

### Rauwiloid® + Hexamethonium

In severe, otherwise intractable hypertension this single-tablet combination provides smoother, less erratic response to hexamethonium. Each tablet contains 1 mg. Rauwiloid and 250 mg. hexamethonium chloride dihydrate. Initial dose,  $\frac{1}{2}$  tablet q.i.d.

**Riker** LOS ANGELES

# NEWS AND NOTES

## Dr. McLean Receives Swedish Award

Dr. Franklin C. McLean, Emeritus Professor of Physiology of the University of Chicago, was awarded an honorary degree of Doctor of Medicine by the University of Lund in a ceremony in the Cathedral of Lund, Sweden. Dr.

McLean organized the University of Chicago Clinics and was its first director. Since his retirement he has remained at the University to continue his research on the physiology of bone.

## Award to University of Louisville

The Department of Pediatrics of the University of Louisville School of Medicine has received a grant of \$10,000 from the Courier-Journal and Louisville Times Foundation to conduct a study of identical twins.

## Lupus Erythematosus Foundation

Announcement has been made of the establishment of the National Lupus Erythematosus Foundation, Inc. in California. Because of its close relationship to rheumatoid arthritis, it is believed that the incidence of lupus erythematosus will become a more significant field for research. The Foundation was formed to support basic and clinic research on both systemic and discoid lupus erythematosus.

## Ford Foundation Grant to Yale

The Yale University School of Medicine is the recipient of a \$3,600,000 grant from the Ford Foundation. This is one of a number of awards made by the Foundation to strengthen instruction in the nation's private medical schools.

## Harry E. Bacon Foundation Established

Former residents and fellows of the Temple University School of Medicine have established the Harry E. Bacon Proctologic Residents Research Foundation. Dr. Bacon is Head of the Department of Colon and Rectal Surgery.

—Continued on page 177a

in seborrheic dermatitis



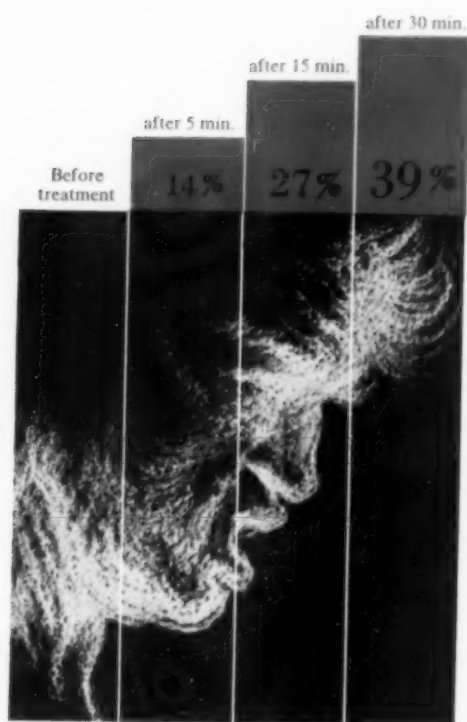
and many other skin disorders  
use new **Vioform-<sup>®</sup>**  
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See page following 102a  
for actual clinical demonstration



# *A single oral dose of Elixophyllin terminates acute asthmatic attacks in minutes*



Vital capacity studies on 20 patients in acute asthmatic attack show the prompt and progressive increases following a single oral dose of Elixophyllin.<sup>1</sup> Severe attacks are usually terminated in 15-30 minutes, with excellent to good response in 97 of 108 patients.<sup>1,2,3,4</sup>

Adult dose in severe attacks is a wineglassful (75 cc. or 5 tablespoonfuls) containing 400 mg. theophylline in hydroalcoholic solution (alcohol 20%). Children's dosage — 0.375 ( $\frac{3}{8}$ ) cc. per lb. body weight.

For day and night relief of chronic symptoms of asthma, emphysema, etc.: 3 tablespoonfuls on arising, at 3 P.M., and on retiring. After two days, reduce dosage gradually.

1. Spielman, D.: *Ann. Allergy* 15:270, 1957.
2. Kessler, F.: *Conn. St. M. J.* 21:205, 1957.
3. Schluger, J. et al.: *Am. J. M. Sci.* 234:28, 1957.
4. Greenbaum, J.: *Ann. Allergy* (in press).

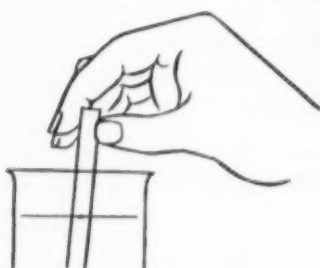
## **ELIXOPHYLLIN**

*Sherman Laboratories*

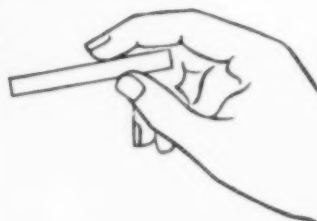
*Literature on request*

*Detroit 11, Michigan*

**new concept!**  
**COLORIMETRIC**  
**test for proteinuria**  
**ALBUSTIX**  
TRADEMARK  
**REAGENT STRIPS**



just wet...



...and read immediately

entirely new concept  
 ALBUSTIX Reagent Strips employ a new and different chemical principle that indicates the presence of proteinuria by a color change rather than by a precipitate in a solution.

colorimetric readings  
 wide-range, graduated color scale eliminates guesswork—no color change with a negative urine

sensitive  
 reacts immediately with clinically significant albuminuria

convenient, timesaving  
 firm, easy-to-handle strip with reactive tip...no waiting...no equipment...  
 no heating...completely disposable

**available:** ALBUSTIX Reagent Strips—Bottles of 120.

*also  
 available:*

**ALBUTEST®**  
BRAND  
 Reagent Tablets

ALBUTEST employs the same chemical principle as ALBUSTIX—colorimetric test for proteinuria. A color guide provides points of reference for interpreting results. Bottles of 100 and 500 reagent tablets.

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39057

## NEWS AND NOTES

—Continued from page 174a

The purposes of the organization are to aid financially in research problems referable to the rectum and colon, to supplement the income of needy residents, to present awards for original work performed, and to establish a residents' travel fund to visit surgical clinics.

### New Mental Hygiene Institutions

Two mental hygiene units are proposed for the New York metropolitan area. A 3,000-bed hospital, expected to cost \$52,000,000, will be located on Staten Island. A school to be erected in Brooklyn is expected to accommodate 600, and will cost an estimated \$15,000,000. The school is intended for adolescents now cared for in other

state schools for the mentally defective, and will emphasize job training.

### Grant to University of North Carolina

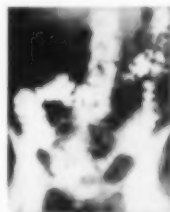
The National Institute of Allergy and Infectious Diseases of the U.S. Public Health Service has awarded \$94,010 to Dr. William J. Cromartie of the University of North Carolina School of Medicine for a five-year study of bacterial infections of the kidney.

### Cardiology Department at Mt. Sinai Hospital

An integrated Department of Cardiology has been established at the Mount Sinai Hospital, New York City, under Dr. Charles K. Friedberg who will serve as cardiologist to the hospital and attending physician for cardiology. The Cardiology Department, a division of the Department of Medicine, will include and coordinate all cardiac groups and their clinical and research activities.

when anxiety and tension "erupts" in the G. I. tract...

**in spastic  
and irritable colon**



**PATHIBAMATE\***

Meprobamate with PATHILON® Lederle

Combines Meprobamate (400 mg.) the most widely prescribed tranquilizer... helps control the "emotional overlay" of spastic and irritable colon—without fear of barbiturate loginess, hangover or habituation... with PATHILON (25 mg.) the anticholinergic noted for its extremely low toxicity and high effectiveness in the treatment of many G.I. disorders.

Dosage: 1 tablet t.i.d. at mealtime. 2 tablets at bedtime. Supplied: Bottles of 100, 1,000.



\*Trademark      ® Registered Trademark for Trichloresethyl Subide Lederle  
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### Ciba Award to Dr. Halmi

Dr. Nicholas S. Halmi, Associate Professor in the Department of Anatomy at the State University of Iowa, was presented with the 1957 Ciba award of the Endocrine Society for outstanding research in human endocrine glands. Dr. Halmi will apply the \$2,500 to his current research work.

### New Facilities at N.Y.U.-Bellevue Medical Center

Construction has begun for the enlargement of the Institute of Physical Medicine and Rehabilitation of the New York University-Bellevue Medical Center. The seven-story building will provide facilities for 110 adults and 40 children, an increase of 50 per cent

over the current capacity. The children's division will occupy an entire floor with all needed facilities for in-patient and out-patient care as well as recreation, dining, sleeping quarters, and facilities for speech and hearing training. Additional space will allow for a complete prevocational training workshop as well as dental and eye clinics.

### Temple University School of Medicine

A grant of \$181,126 from the Fels Fund has been awarded to the Fels Research Institute of Temple University School of Medicine to conduct research during the next fiscal year. In addition, a special grant of \$20,000 has been earmarked for alterations and enlargement of the department's present research facilities.

### Gifts to N.Y.U.-Bellevue Medical Center

The Samuel H. Kress Foundation plans to make available funds to provide a chair in surgery at the New York University Post-Graduate Medical School to be named in honor of Rush H. Kress.

In addition to a recent pledge of \$5,000,000 toward the reconstruction of the former New York Post-Graduate Hospital, the Foundation has given more than \$8,000,000 to the Post-Graduate Medical School during the past eight years.

### Vertigo Clinic at Temple University

The Department of Otorhinology, Temple University Medical Center, Philadelphia, has opened a special clinic for the study of the labyrinth, or internal ear. A complete survey of the pa-

—Continued on page 182a

in atopic eczema



and many other skin disorders  
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See page following 102a  
for actual clinical demonstration



For the  
greatest  
potential value  
and the  
least probable risk

# SIGNEMYCIN<sup>\*</sup> V

OLEANDOMYCIN TETRACYCLINE-PHOSPHATE BUFFERED



multi-spectrum potentiated therapy . . .  
buffered for higher, faster antibiotic levels  
. . . adds new certainty in antibiotic therapy . . . particularly for that 90% of the  
patient population treated at home or office  
when susceptibility testing is not  
practical—

*Supplied:*

SIGNEMYCIN V CAPSULES containing 250 mg. (oleandomycin 83 mg., tetracycline 167 mg.), phosphate buffered. Bottles of 16 and 100.

SIGNEMYCIN<sup>†</sup> CAPSULES—250 mg. (oleandomycin 83 mg., tetracycline 167 mg.), bottles of 16 and 100; 100 mg. (oleandomycin 33 mg., tetracycline 67 mg.), bottles of 25 and 100.

SIGNEMYCIN FOR ORAL SUSPENSION—1.5 Gm., 125 mg. per 5 cc. teaspoonful (oleandomycin 42 mg., tetracycline 83 mg.), mint flavored, bottles of 2 oz.

SIGNEMYCIN INTRAVENOUS—500 mg. vials (oleandomycin 166 mg., tetracycline 334 mg.), and 250 mg. vials (oleandomycin 83 mg., tetracycline 167 mg.); buffered with ascorbic acid.



PFIZER LABORATORIES, Brooklyn 6, N. Y.  
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World leader in antibiotic development and production

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<sup>†</sup>Trademark, oleandomycin tetracycline

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A FULL RANGE OF DIETARY AND THERAPEUTIC  
SUPPORT FOR **OLDER PATIENTS**

**B-COMPLEX VITAMINS**

Thiamine Mononitrate	5 mg.
Riboflavin	5 mg.
Pyridoxine Hydrochloride	1 mg.
Nicotinamide	20 mg.
Calcium Pantothenate	5 mg.

**OIL SOLUBLE VITAMINS**

Vitamin A	1.5 mg. (5000 units)
Vitamin D	12.5 mcg. (500 units)
Vitamin E	10 mg.

**HEMATOPOIETIC FACTORS**

Bevidoral®	½ U.S.P. Unit (oral)
<small>(Vitamin B<sub>12</sub> with Intrinsic Factor Concentrate, Abbott)</small>	
Ferrous Sulfate, U.S.P.	75 mg.
Folic Acid	0.25 mg.

**CAPILLARY STABILITY**

Ascorbic Acid	50 mg.
Quertine® (Quercetin, Abbott)	12.5 mg.

**LIPOTROPIC FACTORS**

Betaine Hydrochloride	50 mg.
Inositol	50 mg.

**ANTI-DEPRESSANT**

Desoxyn® Hydrochloride	1 mg.
<small>(Methamphetamine Hydrochloride, Abbott)</small>	

**HORMONES**

Sulestrex® (Piperazine Estrore Sulfate, Abbott)	0.3 mg.
Methyltestosterone	2.5 mg.

*Streamlined into the smallest tablet*  *of its kind*

 **GERILETS**  
GERIATRIC SUPPORTIVE FORMULA, ABBOTT





## NEWS AND NOTES

—Continued from page 178a

tient will be made together with appropriate hearing and labyrinthine studies; the report will be sent to the referring physician.

### Dr. Hinshaw Lectures in Russia

Dr. Horton C. Hinshaw of the Stanford University School of Medicine recently delivered a paper on *Present-day Treatment of Tuberculosis in the United States* before the U.S.S.R.'s sixth All-Union Congress on Tuberculosis at Moscow. Dr. Hinshaw is head of the Stanford Division of Chest Diseases.

### Award of Merit to Dr. Alexander

Dr. I. Hope Alexander was recently the recipient of the Annual Award of

Merit presented by the Pennsylvania Public Health Association. A practicing physician for 50 years, Dr. Alexander has been Director of the Health Department for twenty years, and has campaigned actively for revision of Pennsylvania's milk laws, smoke prevention, and health surveys.

### Cancer Research Grant for Duke University

Dr. Edward C. Horn, Associate Professor of Zoology at Duke University, has been awarded a three-year cancer research grant of \$30,000 by the National Cancer Institute of the U.S. Public Health Service to investigate antisera.

### International Congress of Neurological Sciences

The first International Congress of Neurological sciences convened at Brussels, Belgium, in July 1957. Several organizations participated by holding their meetings conjointly: the sixth International Congress of Neurology; the third International Congress of Neuropathology; the fourth International Congress of Electro-encephalography and Clinical Neurophysiology; the first International Congress of Neurological Surgery; the fifth meeting of the International League against Epilepsy, and the fifth Symposium Neuroradiologicum. Representatives from America,

—Continued on page 184a



in anogenital pruritus

and many other skin disorders  
use new **Vioform-<sup>®</sup>**  
**Hydrocortisone**  
**Cream**

antibacterial  
antifungal  
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for actual clinical demonstration

182a

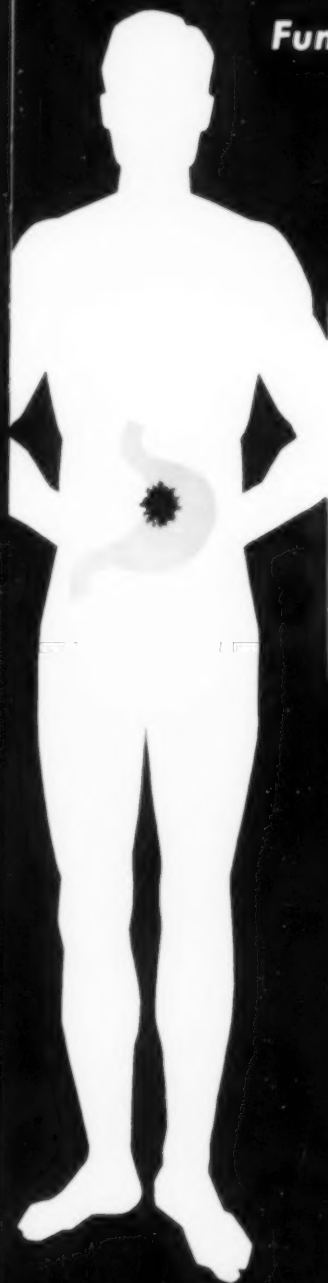
### WHO IS THIS DOCTOR?

(from page 53a)

JOHN KEATS

MEDICAL TIMES





**Functional and Organic Control**

of **PEPTIC ULCER**

Gastro-Intestinal  
Irritability and Tension

**MONODRAL<sup>®</sup>**  
with **MEBARAL<sup>®</sup>**

*Potent*

TABLETS

ANTISECRETORY • ANTICHOLINERGIC • SEDATIVE

Each tablet contains:

Monodral bromide	5 mg.
Mebaryl	32 mg.

**PROVIDES**

Dependable control of hyperacidity and hypermotility. Spasmolysis. Prompt and prolonged pain relief. Tranquillity without drowsiness.

**DOSE**

Peptic ulcer, 1 or 2 tablets three or four times daily. Other gastro-intestinal disorders, 1 tablet three or four times daily.

**SUPPLIED:** Bottles of 100 tablets.

Monodral (brand of penthienate) and Mebaral (brand of mephobarbital), trademarks reg. U. S. Pat. Off.

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NEW YORK 17, N. Y.

**Protective  
Coating  
with**

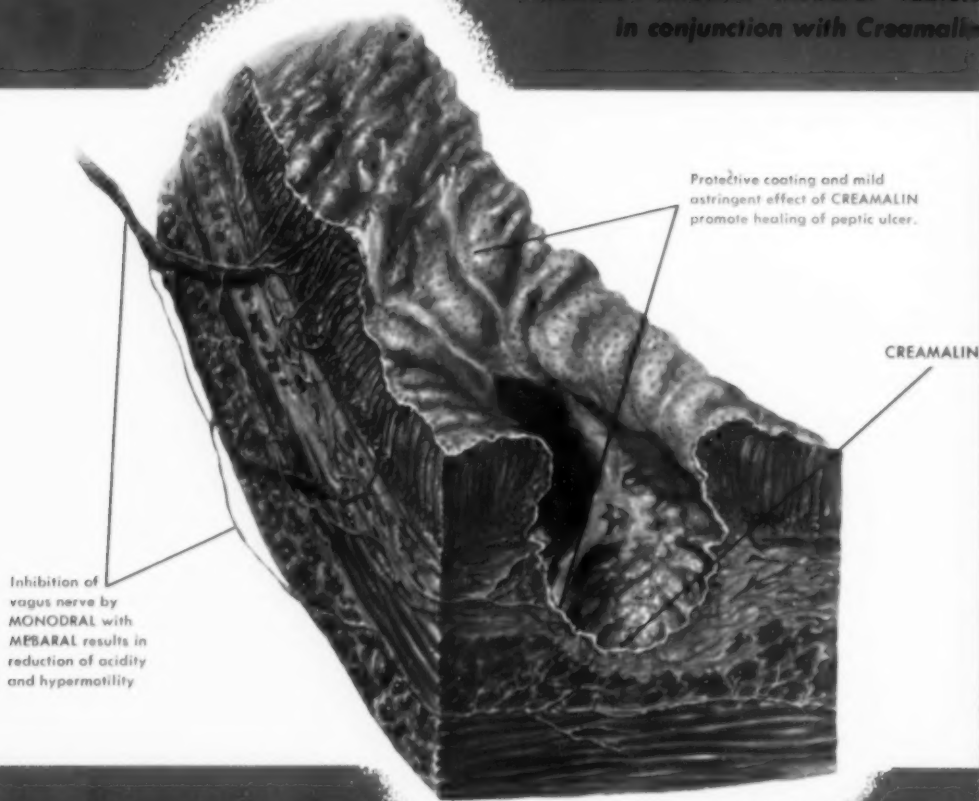
# *Creamalin*<sup>®</sup>

PIONEER ALUMINUM HYDROXIDE GEL

**FAST ACTING REACTIVE GEL**

*For best results in* **PEPTIC ULCER**

*Prescribe Monodral<sup>®</sup> Mebaral<sup>®</sup> tablets  
in conjunction with Creamalin*



Inhibition of  
vagus nerve by  
MONODRAL with  
MEBARAL results in  
reduction of acidity  
and hypermotility

Protective coating and mild  
astringent effect of CREAMALIN  
promote healing of peptic ulcer.

CREAMALIN

**DOSE:**

From 2 to 4 teaspoonfuls Creamalin liquid or from 2 to 4 Creamalin tablets (well chewed) every two to four hours, with a small amount of water or milk.

*Creamalin liquid* — 8 and 16 fl. oz.  
*Creamalin tablets* — bottles of  
50 and 200

Creamalin (brand of aluminum hydroxide gel), Monodral (brand of penthiolate) and Mebaral (brand of mephobarbital), trademarks reg. U. S. Pat. Off.

*Winthrop* **LABORATORIES**  
NEW YORK 16, N. Y.

## THE BIO-FLAVONOIDS

A growing group of clinical reports today indicates the importance of the Citrus Bio-flavonoids in health and disease.

Yet it was over 30 years ago that the first report of Sunkist Bio-flavonoid Research was published. As the manufacturer of citrus products, Sunkist Research has continued to produce standardized Citrus Bio-flavonoids to the Pharmaceutical Industry.

### CITRUS BIO-FLAVONOIDS

Hesperidin  
Hesperidin Methyl Chalcone  
Lemon Bio-flavonoid Complex  
Calcium Flavonate Glycoside

### CLINICAL APPLICATIONS

Extensive Bio-flavonoid bibliography, reporting investigation over many years, is rapidly being favorably documented.

Hesperidin and the other Citrus Bio-flavonoids have been found effective as adjuncts in the treatment of disease syndromes in which capillary abnormalities appear at both subclinical and clinical levels.

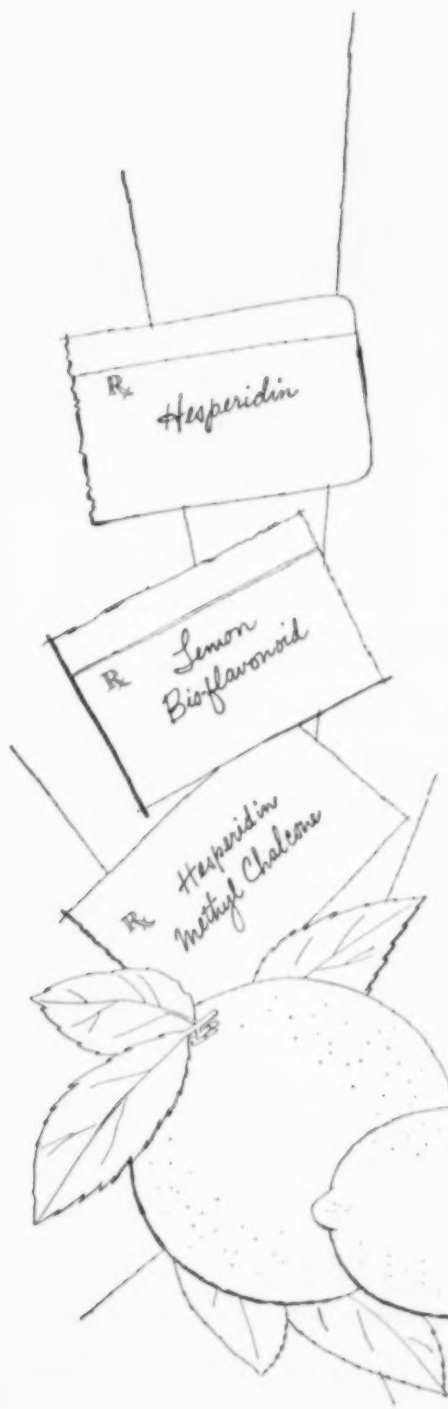
Indications for the use of the Citrus Bio-flavonoids are on a twofold basis, as: 1. Nutritional factors. 2. Therapeutic agents.

Many therapeutic uses are as yet in suggestive and indicative stages—respiratory disease, etc. Conclusive evidence is being documented in the prenatal control of habitual abortion and in vascular disease.

Hesperidin and other Citrus Bio-flavonoids in combination with therapeutic agents and nutritional factors are available to the medical profession as specialties developed by leading pharmaceutical manufacturers.

**Exchange** PHARMACEUTICAL SALES

**Sunkist Growers**  
PRODUCTS DEPARTMENT, ONTARIO, CALIFORNIA



## NEWS AND NOTES

—Continued from page 182a

Great Britain, Japan and a number of European countries were present.

### Contribution to Virus Research

The Rockefeller Foundation has appropriated an additional \$827,750, making a total of \$3,050,000 for the study of insect-borne tropical viruses which seasonally cause diseases in temperate-zone regions.

### Husik Prize to Canadian Physician

Dr. William D. Stewart of Vancouver, Canada, has become the first recipient of the Maurice Husik Prize for his out-

—Continued on page 186a

in chronic  
eczematous dermatitis



and many other skin disorders

use new **Vioform-®**  
**Hydrocortisone**  
**Cream**

antibacterial  
antifungal  
anti-inflammatory  
antipruritic

Tubes of 5 and 20 Gm.  
VIOFORM® (hydrocortisoneacetate CIBA)

C I B A SUMMIT, N. J.

See page following 102a  
for actual clinical demonstration

## Through The Menstrual Years of Life-

THE frequency with which the menstrual life of so many women is marred by functional aberrations that pass the borderline of physiologic limits, emphasizes the importance of an effective uterine tonic and regulator in the practicing physician's armamentarium.

In ERGOAPIOL (Smith) with SAVIN the action of all the alkaloids of ergot (prepared by hydro-alcoholic extraction) is synergistically enhanced by the presence of apiol and oil of savin. Its sustained tonic action on the uterus provides welcome relief by helping to induce local hyperemia, stimulating smooth, rhythmic uterine contractions and serving as a potent hemostatic agent to control excessive bleeding.

May we send you a copy of the booklet "Menstrual Disorders", available with our compliments to physicians on request.

MARTIN H. SMITH COMPANY

131 EAST 23rd STREET, NEW YORK 10, N. Y.

ERGOAPIOL (SMITH) with SAVIN

• THE PREFERRED UTERINE TONIC •

Now

the "**CLUSIVOL**" family offers  
3 related products to satisfy  
individual needs in all age groups.



for older patients

**"CLUSIVOL" GERIATRIC**

Offers combined estrogen and androgen with 24 nutritional elements to promote greater metabolic efficiency in the upper age groups.

No. 294—Capsules, bottles of 100 and 1,000.



for adolescents and adults

**"CLUSIVOL" CAPSULES**

Provide an easy-to-take multiple vitamin formulation with amino acids and essential minerals for individuals who prefer capsules.

No. 293—Bottles of 100 and 1,000.



for infants and children

**"CLUSIVOL" SYRUP**

The candy-flavored base of this comprehensive vitamin-mineral formula appeals particularly to children but is also enjoyed by adults who prefer liquid medication.

No. 948—Bottles of 8 fluidounces, with free unbreakable plastic dispenser; also bottles of 16 fluidounces.



AYERST LABORATORIES • NEW YORK, N. Y. • MONTREAL, CANADA

## NEWS AND NOTES

—Continued from page 184a

standing investigative work while a matriculate with the department of dermatology and syphilology of New York University Post-Graduate Medical School. The award was announced by Dr. Marion B. Sulzberger, George Miller MacKee professor and chairman of the department and director of the Center's New York Skin and Cancer Unit.

Dr. Stewart was the senior investigator and, with Dr. Victor H. Witten, co-author of work on "The Measurement of X-radiation Received by the Gonads During Dermatologic Therapeutic X-radiation Techniques."

Dr. Maurice Husik, for whom the prize was named, has been on the staff of the New York Skin and Cancer Unit for twenty-five years. During this period of time grateful patients established a fund under his jurisdiction to provide treatment for indigent patients.

In July of 1956 the Maurice Husik Prize was established and the cash amount will vary from year to year, depending upon the amount available as income from the Husik Fund which has endowed the prize.

### U. of Penn. Bestows Honorary Degree

C. Mahlon Kline, of Smith, Kline & French Laboratories, recently received an honorary Doctor of Science degree

—Continued on page 189a

## EFFECTIVE TREATMENT AND PREVENTION OF Diaper Rash


Diaparene® Chloride Ointment 93% effective in the treatment of ammonia dermatitis.<sup>1</sup>  
The case illustrated cleared in 4 days.

<sup>1</sup> Niedelman, M. J. and Bleier, A., *J. Ped.* 37:762, 1950.



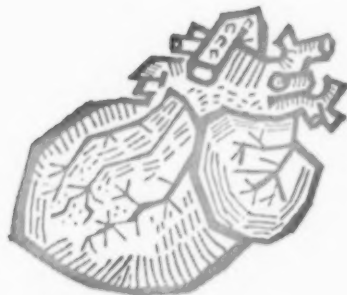
SUPPLIED: 1 oz. tubes  
2 oz. tubes  
1 lb. jars

LITERATURE AND  
SAMPLES ON REQUEST

 PHARMACEUTICAL DIVISION, HOMEMAKERS' PRODUCTS CORPORATION • 380 SECOND AVE., NEW YORK 10, N. Y.



## forestalls the crisis episode



**In angina pectoris**... the use of nitroglycerin is comparable to calling the fire department: essential, but far less desirable than preventing the crisis in the first place.

The continued routine administration of Choleldyl often makes such prevention possible.<sup>1,2</sup> Choleldyl therapy usually results in fewer attacks of pain... less severe attacks... increased working capacity... and partial or total discontinuance of nitroglycerin.<sup>1,3</sup>

**In chronic asthma**, too, acute attacks can often be prevented with systematic long-range administration of Choleldyl. In chronic bronchitis and emphysema, Choleldyl relieves the state of bronchospasm... reduces the

occurrence of acute episodes... and lessens the need for aerosol bronchodilators.<sup>4</sup>

In both indications, Choleldyl is compatible with emergency therapy; it can be given for indefinite periods without losing its effectiveness.<sup>2,5</sup>

*Dosage suggested*—initial, to determine patient response: 200 mg. q.i.d.; maintenance range: 100–400 mg. q.i.d.

*Supplied*: tablets of 200 mg. (yellow) and 100 mg. (red) in bottles of 100, 500 and 1,000.

*References*: 1. Grossman, A. J., et al.: *Internat. Rec. Med.* 167:265 (May) 1954. 2. Katz, S., and Mast, G. W.: *J. Am. Geriatrics Soc.* 4:251 (Mar.) 1956. 3. Aravanis, C., and Luisada, A. A.: *Ann. Int. Med.* 44:111 (June) 1956. 4. Katz, S., and McCormick, G. F.: *Internat. Rec. Med.* 167:271 (May) 1954. 5. *J.A.M.A.* 160:467 (Feb. 11) 1956.

# CHOLELDYL®

(choline theophyllinate) brand of oxtriphylline

effective... well-tolerated... oral xanthine therapy



Nepera Laboratories Div., Morris Plains, N. J.



**NEW  
PRODUCT**

**...IN CONSTIPATION**

# treat both STOOL

by utilizing the wetting effect of an optimal 50 mg. dose of dioctyl sodium sulfosuccinate together with the hydrating effect produced by the doubly standardized principles of SENOKOT. Fecal hydration is effected in 6-7 hours.

# and BOWEL

by reactivating Auerbach's plexus in the colon, thus inducing normal peristalsis; the result is gentle, natural evacuation usually within 8-10 hours. SENOKAP helps to bring about rehabilitation of the constipated patient.

*Rx Senokap  
Capsules # 60  
Sig: Caps + or  
# at bedtime.*

# SENOKAP

*clinically proven*  
**TIMED-stool softener / TIMED-neuroperistaltic**

BRAND OF STANDARDIZED CONCENTRATE OF TOTAL SENOKOT FORMULATED WITH THE DOUBLE ACTION SULFOSUCCINATE

\*Bibliography (1-22) available on request to the Medical Director.



*The Purdue Frederick Company*

NEW YORK 16, N. Y. | MONTREAL 6, P. Q.



## NEWS AND NOTES

—Continued from page 186a

from the University of Pennsylvania for his activities in promoting "as a shared enterprise" cooperative research between academic medicine and the pharmaceutical industry.

### Recent Research Grants

Grants-in-Aid in the amount of \$95,393.00 have been awarded in the first half of 1957 by the National Vitamin Foundation, to University investigators for research in nutritional biochemistry and metabolism, it was announced.

Included among recipients of the grants and the subjects of their research are:

● Drs. William B. Bean and Robert E. Hodges, Professor and Head of the Department of Internal Medicine and Di-

rector of Metabolic Ward respectively; State University of Iowa, University Hospitals; \$8,300 for continuation of their investigations of pantothenic acid and its antagonists in human volunteers.

● Dr. Albert E. Eisenstein, Assistant Professor of Preventive Medicine and Medicine, Washington University, School of Medicine; \$5,000 for continuing studies of the relationship of dietary factors to the production of adrenal steroid hormones.

● Drs. R. S. Goodhart, B. F. Chow and S. A. Tauber, The Nutrition Clinics Fund; \$11,500 for continuation of studies of B<sub>12</sub> and B<sub>6</sub> metabolism in the aged.

● Dr. George J. Gabuzda, Assistant Professor of Medicine, Western Reserve University, School of Medicine; \$1,200 for continuing studies of the metabolism and interrelationship of

—Continued on following page

when anxiety and tension "erupts" in the G. I. tract...

## IN GASTRIC ULCER



## PATHIBAMATE\*

Meprobamate with PATHILON® Lederle

Combines Meprobamate (400 mg.) the most widely prescribed tranquilizer... helps control the "emotional overlay" of gastric ulcer — without fear of barbiturate loginess, hangover or habituation... with PATHILON (25 mg.) the anticholinergic noted for its extremely low toxicity and high effectiveness in the treatment of many G.I. disorders.

Dosage: 1 tablet t.i.d. at mealtime. 2 tablets at bedtime.

Supplied: Bottles of 100, 1,000.



\*Trademark

® Registered Trademark for Trichloethyl Halide Lederle

LEDERLE LABORATORIES DIVISION, AMERICAN CYANAMID COMPANY, PEARL RIVER, NEW YORK

## NEWS AND NOTES

—Continued from preceding page

folic acid, citrovorum factor and ascorbic acid.

● Dr. Albert L. Lehninger, Director, Department of Physiological Chemistry, The Johns Hopkins University, School of Medicine; \$5,650 annually for 2 years for further studies of enzymatic and genetic aspects of ascorbic acid synthesis in animal tissues; biological function of ascorbic acid.

● Dr. Herman C. Lichstein, Professor of Bacteriology and Immunology, University of Minnesota, The Medical School; \$2,700 for continuing studies of compounds structurally related to biotin for the study of the mechanism

—Continued on page 192a

in contact dermatitis



and many other skin disorders

use new **Vioform®**  
**Hydrocortisone**  
**Cream**

antibacterial  
antifungal  
anti-inflammatory  
antipruritic

Tubes of 5 and 20 Gm.

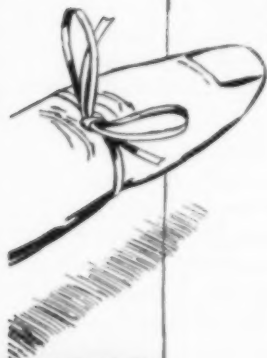
VIOFORM® (iodochlorhydroxyquin CIBA)

**C I B A** SUMMIT, N. J.

See page following 102a  
for actual clinical demonstration



"That ekg technician will have to go . . . there hasn't been a normal reading in weeks!"



## *The Name to Remember* **RIB-BACK**

To the Profession it has served with undivided responsibility for so many years . . . BARD-PARKER has devoted its scientific knowledge and the inimitable skill of its craftsmen in developing the finest surgical blade possible . . . a blade that meets the demand of the Profession for quality and economy.

The satisfaction of knowing you have chosen the best is yours when you use B-P RIB-BACK blades.

*It's Sharp*

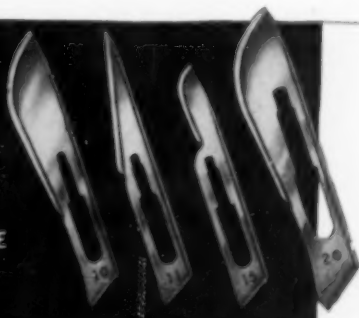
*Ask your dealer*

**BARD-PARKER COMPANY, INC.**  
Danbury, Connecticut

**UNIFORMLY SHARP**

**RIGID  
STRONG**

the 'only' RIB-BACK BLADE



## NEWS AND NOTES

—Continued from page 190a

of action of biotin.

● Dr. O. Neal Miller, Associate Professor of Biochemistry and Medicine, Tulane University, School of Medicine; \$3,500 for continuing studies on the metabolism of vitamin B<sub>12</sub>.

● Dr. Robert E. Olson, Professor and Head, Department of Biochemistry and Nutrition, University of Pittsburgh, Graduate School of Public Health; \$7,528 for continuing studies of the role of dietary protein, choline and fatty acids in controlling serum lipid and lipoprotein levels in rat and man.

● Dr. Joseph Seronde, Jr., Laboratory of Comparative Pathology, Maynard, Mass.; \$3,915 for a morphological investigation of ulcers and other duodenal changes arising in adult pantothenate-

deficient rats.

● Dr. Theodore L. Sourkes, Assistant Professor of Biochemistry, McGill University and Senior Research Biochemist, Allan Memorial Institute of Psychiatry, Montreal, Quebec, Canada; \$4,050 for studies of the role of nutritional factors in the formation of catecholamines.

● Dr. Walter G. Unglaub, Associate Professor of Medicine, Tulane University, School of Medicine; \$10,000 annually for 2 years for studies of pyridoxine metabolism in pregnancy, with particular reference to arteriosclerotic changes in placental vessels.

● Dr. Theodore F. Zucker, Assistant Professor of Pathology, Columbia University, College of Physicians and Surgeons; \$6,300 for continuing studies of immediate versus remote results of pantothenic acid deficiency in adult rats.

### EFFECTIVE CONTROL OF HYPERMOTILITY.

Each patient has wide physiological and emotional tolerances to anticholinergics. Maltcotran's wide dosage latitude facilitates regulation of your patient's dosage according to his need, not his tolerance.

Maltcotran assures prompt arrest of gastro-intestinal motility — and reduction of gastric secretion.

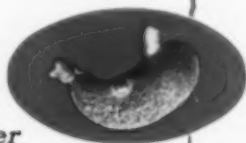
# MALCOTRAN®

for peptic ulcer



MALTBIE LABORATORIES DIVISION • WALLACE & TIERNAN INC.

PM-72



● Supplementary grants were given to aid the research of Dr. Robert Hillman of the State University of New York (\$4,000) and Dr. George Wolf of the University of Illinois (\$600).

#### **Dr. Cooper Appointed as Full Professor**

The promotion of Dr. Irving S. Cooper from assistant professor of neurosurgery to professor of clinical neurosurgery, of New York University Post-Graduate Medical School, was announced recently.

Dr. Cooper is internationally recognized for his discovery and development of two surgical procedures for the relief of involuntary movement disorders in persons afflicted with certain types of Parkinsonism and cerebral palsy. The procedures are known as the

"Anterior Choroidal Artery Ligation For Involuntary Movement And Rigidity" and "Chemopallidectomy."

He received his M. D. degree in 1945 from George Washington University and did postgraduate study in neuroanatomy at Columbia University from September 1945 to January 1946. In 1951 Dr. Cooper received an M. S. degree in neuropathology and a Ph. D. in neurosurgery from the University of Minnesota, following a three-year fellowship in neurosurgery at the Mayo Clinic.

Dr. Cooper is on the staffs of University Hospital, of New York University-Bellevue Medical Center; New York City's Bellevue Hospital Center; Central Islip (New York) State Hospital; and St. Barnabas Hospital.

—Continued on page 196a

# end diaper rash with White's Vitamin A&D Ointment

WHITE Laboratories, Inc.  
Kenilworth, N. J.

#### **RELIEVES DIAPER DISCOMFORT—**

- soothes irritated tender skin • cools raw, burning surfaces
- resists ammoniacal assaults • protects against chafing

Vitamins A and D in a lanolin petrolatum base 3½ & 4 oz. tubes, 1 lb. jars and 5 lb. containers



## POSTGRADUATE SEMINAR

### LECTURE: SULFONAMIDES

#### HISTORY:

Sulfonamide was first prepared in 1908 by Gelmo during his investigation of AZO dyes. Not until 1932 was the chemotherapeutic value of sulfonamide (prontosil) to become known. In 1933 the first clinical case

#### SAFETY:

Crystalluria  
and other renal complications are altogether too common in prolonged high dosage sulfonamide. Certain forms sulfisoxazole have demonstrated remarkable safety due to high solubility.

Safety  
OVER 25,000,000 patients  
have taken more  
than 1,300,000,000  
Gantrisin tablets since  
1949 — this is an unequalled record of  
success and safety.

# Consistent sulfonamide safety with Gantrisin is confirmed in over 35,000 reported cases.

## INVESTIGATORS FOUND THAT

"Gantrisin is highly soluble in an acid urine, and is well tolerated . . . Its high solubility . . . minimizes the chances of crystallization . . ."

Lowsley, O. S., and Kirwin, T. J.: *Clinical Urology*, ed. 3, Baltimore, Williams & Wilkins Company, 1936, vol. 2, p. 975.

"Despite the fact that alkali was not given and no attempt was made to force fluids, [Gantrisin] did not cause the formation of concretions and there was no decrease in urine output."

Carroll, G., Allen, H. N., and Flynn, H.: *J.A.M.A.* 148:83 (Jan. 14) 1950.

"No serious reactions due to [Gantrisin] were observed in approximately 23,000 courses of the drug."

Yow, E. M.: *Am. Pract. & Digest Treat.* 4:381 (Aug.) 1953.

[Gantrisin] is well absorbed . . . and possesses the advantage of marked solubility in the normal pH range of urine, thus eliminating the need for alkali administration and maintenance of a high fluid intake."

Doeppner, C. W.; Clark, J. L., and Yow, E. M.: *J. Pediat.* 50:531 (May) 1957.

Advantages of [Gantrisin] are that adjuvant alkali therapy is not mandatory, fluids need not be forced, and patients with impaired renal function can be treated with little danger of further injury to the kidney."

Goodman, L. S., and Gilman, A.: *Pharmacologic Basis of Therapeutics*, ed. 2, New York, Macmillan Company, 1955, p. 1316.

Laboratories • Division of Hoffmann-La Roche Inc. • Nutley 10, N. J.



## NEWS AND NOTES

—Continued from page 193a

### Automatic Respirator

An ingenious apparatus for coaxing new-born babies to breathe was shown at an exhibition held by Britain's Royal Society.

The most common cause of deaths in new-born infants is shortage of breath, caused by defects in the lungs or by general weakness which prevents normal breathing. These difficulties are often only temporary, and the baby will recover if he can be tided over the emergency by an artificial respirator. Unfortunately machines used for paralyzed adults, delivering a dose of air at regular intervals, will not do for the

new-born baby, who often takes a few breaths and then rests for a while before starting again. If a regular rhythm is imposed by a machine, the infant struggles against it and does not take in enough air to keep itself alive.

The new machine is an electronic respirator which is actually controlled by the infant itself. When the baby makes an effort to take in breath, a small pressure change in his face mask operates a sensitive trigger valve and brings an electronic controller into operation. The original impulse supplied by the baby is amplified and used to open a valve connected to an air or oxygen cylinder. In this way the baby receives breath when it wants it.

But the amount of air that it gets is not limited by its own feeble strength.

—Continued on page 198a

### WHAT'S YOUR VERDICT?

—Concluded from page 33a

The Supreme Court affirmed the trial court's determination, holding:

"Postoperative care of a gall bladder operation depends upon complex scientific knowledge; consequently, the standard of care should be established by the testimony of physicians and surgeons. Reasonable inferences of mere lay knowledge arising from the established facts did not support (1) the breach of a standard of care of doctors within the community, and (2) the proximate causation of the alleged injuries, even assuming the negligence."

Based on decision of  
Supreme Court of Utah

in seborrheic dermatitis



and many other skin disorders

use new

**Vioform-<sup>®</sup>  
Hydrocortisone  
Cream**

antibacterial  
antifungal  
anti-inflammatory  
antipruritic

Tubes of 5 and 20 Gm.

VIOFORM<sup>®</sup> (iodochlorhydroxyquin CIBA)

**C I B A** SUMMIT, N. J.

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See page following 102a  
for actual clinical demonstration



In Angina Pectoris  
*The Attacks Lessen and  
The Patient Loses His Fear*

# Pentoxylon<sup>®</sup>



Each long-acting tablet provides the sustained coronary vasodilating effect of 10 mg. pentaerythritol tetranitrate (PETN) as well as the tranquilizing, anxiety-relieving and pulse-normalizing action of 0.5 mg. Rauwiloid<sup>®</sup> (alseroxylon).

- Reduces incidence of attacks
- Reduces severity of attacks
- Reduces or abolishes need for fast-acting vasodilating drugs
- Reduces tachycardia
- Reduces blood pressure in hypertensives, not in normotensives
- Increases exercise tolerance
- Produces demonstrable ECG improvement
- Exceptionally well tolerated
- Minimal side actions

Dosage: One to two tablets  
q.i.d. before meals  
and on retiring.



LOS ANGELES

## NEWS AND NOTES

—Continued from page 196a

If the child stops breathing for a dangerously long time, the machine takes charge and gives it breath without being asked. But as soon as the child makes another effort itself, the machine responds to it.

The machine, developed by a team of doctors, engineers and physicists, is in regular use for the treatment of respiratory difficulties in premature babies and other new-born infants at the Royal Maternity and Women's Hospital in Glasgow, Scotland.

The apparatus may have application to the treatment of adults, particularly in respiratory paralysis after poliomyelitis.

It is reported that a modified version

may be produced commercially.

### A Stethoscope That Shuts Off Unwanted Sound


Three British medical men have collaborated in designing a new type of stethoscope which both amplifies sounds and allows the doctor to shut out *unwanted* sounds. It is said to be the first instrument of its kind.

It is based on the principle that all sounds have a certain frequency, and it is so designed that a doctor can manipulate two controls so that only sounds of a particular frequency are carried to the ear pieces. With this stethoscope, a doctor can, for example, listen to the heart of a poliomyelitis patient in an iron lung while the latter is operating.


The brain of the instrument is con-

—Continued on page 200a


NOSE COLD



HEAD COLD




MISERABLE COLD



# PHENAPHEN® PLUS

Phenaphen Plus is the physician requested combination of Phenaphen, plus an antihistaminic and a nasal decongestant.



Available on prescription only.

each coated tablet contains:		<b>Phenaphen</b>
Phenacetin (3 gr.)	194.0 mg.	
Acetylsalicylic Acid (2½ gr.)	162.0 mg.	
Phenobarbital (¼ gr.)	16.2 mg.	
Hyoscine Sulfate	0.031 mg.	
		<b>plus</b>
Prophepyridamine Maleate	12.5 mg.	
Phenylephrine Hydrochloride	10.0 mg.	

**NEW!** for patients of all ages  
prevents and relieves skin discomforts  
aids healing

### Superior Antibacterial Action\*



Zones of Growth Inhibition — Agar Plate Tests  
(Zone sizes in millimeters)

TEST ORGANISM	JOHNSON'S MEDICATED POWDER	MEDICATED POWDER A	MEDICATED POWDER B
<i>Proteus vulgaris</i>	5.0	0.0	0.0
<i>Micrococcus pyogenes</i> var. <i>albus</i>	6.5	0.0	0.0
<i>Micrococcus pyogenes</i> var. <i>albus hemolyticus</i>	5.5	0.0	0.0
<i>Micrococcus pyogenes</i> var. <i>aureus hemolyticus</i>	5.5	0.0	0.0
<i>Micrococcus pyogenes</i> var. <i>aureus</i> (Wellcome strain CN491)	6.5	0.0	0.0
<i>Alcaligenes faecalis</i>	10.0	0.0	(3.0) †
† PARTIAL GROWTH INHIBITION			



\*CONTAINS HEXACHLOROPHENE 0.25 PER CENT AND  
PARA-CHLORO-META-XYLENOL 0.25 PER CENT.

**antibacterial:** twofold antiseptic action curbs primary infections, helps prevent secondary infections.

**anti-urease:** specific inhibition of the enzyme urease plus action against urease-producing bacteria checks formation of ammonia...prevents diaper rash and ammoniacal dermatitis.

**superior absorption:** two highly effective moisture absorbents help keep skin cool and dry...combat maceration, chafing and irritation.

**JOHNSON'S MEDICATED POWDER** provides unexcelled dry lubrication as well as effective deodorizing action. It is ideal for sensitive skin—completely safe for babies and children.

02057

*Johnson & Johnson*  
New Brunswick, New Jersey

## NEWS AND NOTES

—Continued from page 198a

tained in a compact box weighing only 18 oz. which is suspended from the neck. Two sets of ear pieces can be used simultaneously, and a tape recorder and a loud-speaker can also be connected. This last feature has an obvious value for teaching purposes. The microphone used with the stethoscope is also specially designed. It conveys only the sounds from the source with which it is in contact and is insensitive to all outside noises.

### Establish Theobald Smith Prize at Wisconsin U.

Dr. Paul F. Clark, emeritus professor of medical microbiology at the University of Wisconsin Medical School, has established the Theobald Smith prize of \$100 to be awarded annually to the

graduating medical student who has submitted the best experimental thesis.

Dr. Clark has donated a total of \$1,000 to make the prize possible for 10 years. The winning student will be selected by a faculty committee.

Theobald Smith, who died in 1934, was a noted pathologist at Harvard and Princeton universities. He was perhaps best known for his finding that Texas Cattle fever, a blood disease that was ruining the American cattle industry in the late 19th century, was caused by a parasite which was passed from one animal to another by ticks. When the ticks were eliminated the disease disappeared. The knowledge that diseases can be transmitted by small insects later proved vitally useful in combatting malaria, yellow fever and typhus fever.

### "Operation Heartbeat"

The kin of Moby Dick were reluctant

—Continued on page 202a

when anxiety and tension "erupts" in the G. I. tract...

## IN DUODENAL ULCER



## PATHIBAMATE\*

Meprobamate with PATHILON® Lederle

Combines Meprobamate (400 mg.) the most widely prescribed tranquilizer... helps control the "emotional overlay" of duodenal ulcer — without fear of barbiturate foginess, hangover or habituation... with PATHILON (25 mg.) the anticholinergic noted for its extremely low toxicity and high effectiveness in the treatment of many G.I. disorders.

Dosage: 1 tablet t.i.d. at mealtime. 2 tablets at bedtime.

Supplied: Bottles of 100, 1,000.



\*Trademark. ® Registered Trademark for Tridihexethyl Iodide Lederle  
LEDERLE LABORATORIES DIVISION, AMERICAN CYANAMID COMPANY, PEARL RIVER, NEW YORK

# IODIDE THERAPY



*without Iodism*

Full doses of iodide medication can be continued a year or longer with no apparent danger of iodism, provided you prescribe IODO-NIACIN.

Iodo-Niacin Tablets contain niacinamide hydroiodide 25 mg. with potassium iodide 135 mg. It has been established that niacinamide hydroiodide combats iodism by the same mechanism as that of niacin and niacinamide against pellagra<sup>1</sup>.

In a series of 59 cases of arteriosclerosis which were treated with Iodo-Niacin Tablets in full dosage over a period of more than a year, *there was not a single case of iodism.*

In urgent cases Iodo-Niacin Ampuls may be used for intramuscular or slow intravenous injection<sup>2</sup>.

The indications for Iodo-Niacin are the same as for potassium iodide; namely, arteriosclerosis, coronary sclerosis, angina pectoris, chronic bronchitis, bronchial asthma, sinusitis, simple colloid goiter, cretinism, hyperthyroidism, thyroid crisis, and preparation for thyroidectomy.

The average adult dosage is 2 tablets three or four times daily after meals, with half a glass of water. For children over six, 1 tablet. This dosage may be continued indefinitely with no apparent risk of iodism.

Supplied in bottles of 100 tablets, slosol-coated, pink.

**IODO-NIACIN\***

\* U.S. PATENT PENDING

1. *Am. J. Digest. Dis.* 22:5, 1955.
2. *M. Times* 84:741, 1956.

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**CHEMICAL**  
**COMPANY**  
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St. Louis 8, Mo.

COLE CHEMICAL COMPANY  
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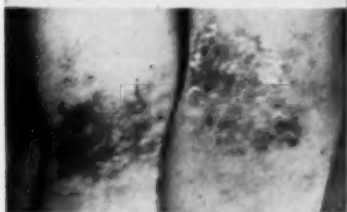
Gentlemen: Please send me professional literature and samples of IODO-NIACIN.

M.D.

STREET

CITY ZONE STATE

in atopic eczema



and many other skin disorders  
use new **Vioform®**  
**Hydrocortisone**  
**Cream**

antibacterial  
antifungal  
anti-inflammatory  
antipruritic

Tubes of 5 and 20 Gm.  
VIOFORM® (iodochlorhydroxyquin CIBA)

C I B A SUMMIT, N. J.

*See page following 102a  
for actual clinical demonstration*

## *Need an Assistant?*

(... A Young Associate with  
Specialized Training)

HAVE YOU SOMETHING TO SELL  
RESIDENTS NOW ... OR WHEN THEY  
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RESIDENT PHYSICIAN

1447 Northern Blvd., Manhasset, N. Y.

## NEWS AND NOTES

—Continued from page 200a

subjects on a recent "Operation Heart-  
beat" expedition that gathered data for  
use in medical and electronic research.

Nine California Gray Whales were  
successfully stuck with harpoons at-  
tached to a 49-strand specially made  
stainless steel cable.

Over this cable whale heartbeats were  
taken.

The project was under the direction  
of the famed Boston heart specialist,  
Dr. Paul Dudley White, who hoped to  
gain further basic understanding of  
human heart action by studying animal  
pulse rates.

The scene of the unusual experiment  
was in a bay, which the whales use as  
a mating and calving site, 450-miles  
south of San Diego.

The harpoons had electronic pick-  
ups. The heartbeat impulses were di-  
rected to floating shortwave transmit-  
ters, which in turn sent the signals to  
shore and ship based receivers. The  
delicate impulses were transcribed onto  
cardiograph tape for later study.

## **History of the American Goiter Association**

In 1921, the Illinois Clinic Club, con-  
sisting of a group of physicians in the  
area of Bloomington, Illinois, was or-  
ganized under the leadership of Dr. E.  
P. Sloan.

The group visited medical clinics and  
hospitals throughout the United States  
and found that many medical centers,  
even when highly advanced, knew very  
little about the problem of goiter.

To stimulate research in this field,

—Continued on page 204a



**Tastiest way to dissolve sore throat symptoms**



(HYDROCORTISONE-BACITRACIN-TYROTHRIN-  
NEOMYCIN-BENZOCAINE TROCHES)

Adult or juvenile, your patients with sore throats will welcome a course of HYDROZETS. These newest Merck Sharp & Dohme troches offer anti-inflammatory, anti-infective and analgesic properties that promptly alleviate distressing mouth or throat irritation whether caused by infection, mechanical injury or allergic reaction. And HYDROZETS taste so good, it's hard to believe they're medicine.

**Formula:** Each HYDROZETS Troche contains — 2.5 mg. 'HYDROCORTONE' to reduce pain, heat and swelling; 50 units Zinc Bacitracin, 1 mg. Tyrothricin and 5 mg. Neomycin Sulfate to combat gram-positive and gram-negative bacteria; and 5 mg. Benzocaine for rapid soothing analgesia. **Other indications:** As adjunct therapy in aphthous ulcers, acute and chronic gingivitis and Vincent's infection.

**Supplied:** Vials of 12 troches.



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the most comprehensive capillary protectant and correctant available. Helps reduce excessive capillary permeability, fragility and bleeding . . . by acting to increase capillary strength and resistance in . . .

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- hypertension
- diabetic retinitis
- rheumatoid arthritis
- aging
- aids in relief of common cold symptoms

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Lemon Bioflavonoid Complex . . .	100 mg.
Rutin (bioflavonoid) . . . . .	100 mg.
Ascorbic Acid . . . . .	100 mg.

Bottles of 100, 500 and 1000

Write for CAPILON samples  
and literature.

**The PAUL PLESSNER COMPANY**  
1627 West Fort St. Detroit 16, Mich.

204a

## NEWS AND NOTES

—Continued from page 202a

the club contacted physicians from all over the United States and in 1923 formed the American Association for the Study of Goiter. In 1948 the name was changed to the American Goiter Association.

One of the early members of the Association, Dr. Seymour D. Van Meter of Denver, Colorado, offered a prize of \$300 to be awarded for the best paper on goiter, especially its basic cause.

The Award was first given in 1930, and was donated annually by Dr. Van Meter until his death in 1934. It was then named the Van Meter Award and has since been offered by the Association for the best paper submitted on basic research into the function of the thyroid gland or clinical studies in this area.

### Some Natives Can Withstand Great Temperature Changes

Certain groups of Australian aborigines live without clothes in spite of tropical temperature drops from 90 degrees during the day to some ten degrees above freezing at night.

Their secret of survival is reduced sensitivity.

Prof. Peter R. Morrison of the University of Wisconsin's zoology department pointed out that the natives "are just less sensitive to sudden temperature shifts than other people."

He reported his findings to fellow scientists attending the annual meeting of the American Federation of Experimental Biologists.

—Continued on page 206a

MEDICAL TIMES



## FOLIC ACID

Primary agent in megaloblastic anemia of pregnancy and infancy, and sprue. Reinforces B<sub>12</sub> in other macrocytic anemias.

## NON-INHIBITORY INTRINSIC FACTOR

Essential to the assimilation of oral B<sub>12</sub> in pernicious and other macrocytic anemias.

## IRON

Primary agent in microcytic anemia due to iron deficiency. Is more active when vitamin C is present.

## VITAMIN C

Potentiates iron in microcytic anemia and folic acid in macrocytic anemias.

## VITAMIN B<sub>12</sub>

Primary agent in pernicious and nutritional macrocytic anemia, but is not assimilated orally without intrinsic factor. Reinforces folic acid in other macrocytic anemias.



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Vitamin B <sub>12</sub> (additional)	15 mcgm.
Powdered Monarch	200 mg.
Ferrous Sulfate Elixirated	100 mg.
Ascorbic Acid (C)	150 mg.
Folic Acid	4 mg.



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An M.D. from Hannibal, Mo.  
Had a cold he could feel in each toe  
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Biomydrin's the stuff—  
It's antibacterial, you know!"



## Biomydrin<sup>®</sup> nasal spray



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in anogenital pruritus



and many other skin disorders

use new **Vioform-<sup>®</sup>**  
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antibacterial  
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antipruritic

Tubes of 5 and 20 Gm.  
VIOFORM<sup>®</sup> (hydrocortisone acetate CIBA)

**C I B A** SUMMIT, N. J.

See page following 102a  
for actual clinical demonstration

Morrison had an opportunity to observe the natives on a government reservation at Haast's Bluff, a colony west of Alice Springs, while studying Australian wildlife during an academic leave in 1954.

"These people are interesting because they aren't bothered by cold nights—despite the fact that they wear no clothing," Morrison explained.

He pointed out that there are three body adaptations which might ordinarily enable mammals of this type to survive these conditions.

"One is simple natural insulation—skin tissues act as a buffering layer between the cold and the inner body."

The second would be increased production of body heat to counteract an increase in external cold.

Neither of these applies to the Australian aborigines, Morrison said.

"These natives simply are not sensitive to temperature changes," he explained, "and no apparent changes in body metabolism occur to combat the cold."

Morrison found that the internal body temperature of the natives fell nearly four degrees during the night while the average temperature of the skin decreased by only twice that amount.

"The extremities have the greatest decrease in skin temperature," he pointed out. "The mean skin temperature of the feet, for instance, fell some 13 degrees during the night."

During the past two years, he said, these natives have begun to wear clothing—but its purpose is not necessarily to help keep them warm.

"It seems to be a matter of social prestige," Morrison explained.

—Continued on page 208a

MEDICAL TIMES

# Requisites for EFFECTIVE LAXATION



## **PHOSPHO-SODA® (Fleet) . . .**

gentle, prompt, thorough and a  
laxative of choice for over 60 years.

### **Taken on an Empty Stomach...**

at least 30 minutes before any meal,  
*but preferably before breakfast.*

### **Amply Diluted with Water...**

Mix required dose with one half glass  
of cold water, follow with additional water.

**SUGGESTED DOSAGE** As a mild eliminant, two  
teaspoonfuls before a meal. For more pronounced  
hydragogue action, four teaspoonfuls before breakfast.

Children: Ten years or older, one half the adult dose;  
five to ten years, one quarter the adult dose.

Phospho-Soda (Fleet) is a solution containing  
per 100 cc., Sodium Biphosphate 48 Gm. and Sodium  
Phosphate 18 Gm.

*In preparing for colonic surgery, preoperative adminis-  
tration of neomycin plus cleansing with Phospho-Soda  
(Fleet) suppresses intestinal bacteria.<sup>(1)</sup>*

*(1) Davis, J.H. et al., Surgery, 35:434, 1954*

## **PHOSPHO-SODA®**

*(Fleet)*

C. B. Fleet Co., Inc., Lynchburg, Virginia  
Makers of the Fleet® Enema Disposable Unit.

## NEWS AND NOTES

—Continued from page 206a

### Research in Ophthalmology and Blindness

A National Committee for Research in Ophthalmology and Blindness was recently formed by representatives from the four national ophthalmic societies, i.e., the American Academy of Ophthalmology and Otolaryngology; the American Medical Association, Section on Ophthalmology; the American Ophthalmological Society, and the Association for Research in Ophthalmology. The Committee plans to stimulate increased interest in ophthalmic research and to co-operate with and act as an advisory group to all persons and agencies interested in blindness, vision, and research

in the basic disciplines of ophthalmology.

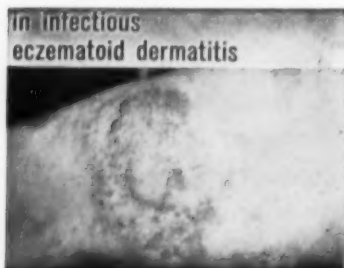
### Increased Facilities at Stanford

The Pharmacology Department of Stanford University Medical School has moved its headquarters from San Francisco to the campus in a new Cancer Chemotherapy Laboratory installed recently in the Anatomy Building. The move marks the first step toward the actual consolidation of the Medical School facilities with the University proper which will be completed when the \$22,000,000 Medical Center is finished in 1959.

The new research facility was built and equipped with the aid of \$50,000 from the National Cancer Institute of the U. S. Public Health Service, plus \$10,000 from University funds.

An additional grant of \$68,000 from the National Cancer Institute is supporting a two-fold program of research during the first year of operation. One group is attacking the problem of why

—Concluded on page 210a



and many other skin disorders

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Tubes of 5 and 20 Gm.

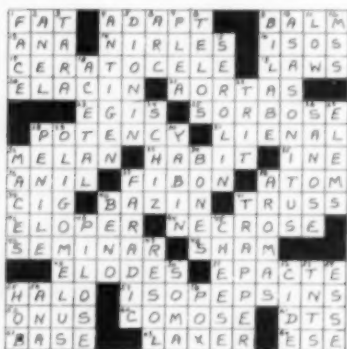
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**CIBA** SOMMIT N.J. (CZSME)

See page following 102a  
for actual clinical demonstration

### MEDICAL TEASERS

Solution to puzzle on page 39a





Increasing the activity  
of your patients with coronary  
artery disease

## THESODATE

The original enteric coated tablet  
of Theobromine Sodium Acetate

It has been well-established that Thesodate supplies theobromine in a very well-tolerated form to provide long-lasting vasodilation and to increase cardiac efficiency so that the patient can engage in greater activity without distress. Because of the special enteric coating, Thesodate tablets may be administered with no gastric side effects.

Supplied as Thesodate tablets: 0.5 Gm. ( $7\frac{1}{2}$  gr.) and 0.25 Gm. ( $3\frac{3}{4}$  gr.) in bottles of 100 and 500.

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**C I B A** SUMMIT, N. J. (240006)

See page following 102a  
for actual clinical demonstration

## NEWS AND NOTES

—Concluded from page 208a

cancer cells develop resistance to anti-cancer drugs. The second approach is a search for new and more potent anti-cancer drugs.

### Training Program at Tulsa

The Children's Medical Center at Tulsa, Oklahoma, is headquarters for a regional training program for personnel to work with mentally retarded children. Financed by a grant of \$55,000 appropriated by Congress, the project is planned on a three-year basis, and will utilize the facilities of the Center, the Tulsa Child Guidance Clinic, and Sunnyside School.

### Activities of Joint Blood Council

The Joint Blood Council of Washington, D. C., has announced the launching of a nation-wide survey of blood transfusion services. The two-year study, made possible by a U. S. Public Health Service grant of \$50,000 will collect, analyze, and disseminate information. Objectives include preparation of standards for accreditation of blood banks, development of a glossary of terms, and the solution of numerous nomenclature problems.

### MEDIQUIZ ANSWERS

(from page 63a)

- 1, C; 2, C; 3, B; 4, C; 5, A; 6, A; 7, B; 8, C; 9, C; 10, B; 11, D; 12, D; 13, A; 14, D; 15, B; 16, A; 17, D; 18, A; 19, C; 20, B; 21, C; 22, A; 23, B; 24, B; 25, A; 26, B; 27, C; 28, A; 29, C; 30, A; 31, D; 32, C; 33, B; 34, A; 35, C.

FOR THE ENTIRE RANGE OF RHEUMATIC-ARTHRITIC  
DISORDERS — from the mildest  
to the most severe

many patients with MILD involvement can be effectively  
controlled with

**'MEPROLONE'**

many patients with MODERATELY SEVERE involvement  
can be effectively controlled with

**'MEPROLONE'**



MULTIPLE COMPRESSED TABLETS

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and NOW for patients with  
SEVERE involvement

The first meprobamate-prednisolone therapy

the one antirheumatic, antiarthritic  
that simultaneously relieves:

(1) muscle spasm (2) joint inflammation  
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comfort and disability.

**SUPPLIED:** Multiple Compressed Tablets in three formulas: 'MEPROLONE'-5—5.0 mg. prednisolone, 400 mg. meprobamate and 200 mg. dried aluminum hydroxide gel. 'MEPROLONE'-2—2.0 mg. prednisolone, 200 mg. meprobamate and 200 mg. dried aluminum hydroxide gel. 'MEPROLONE'-1 supplies 1.0 mg. prednisolone in the same formula as 'MEPROLONE'-2.



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References: 1. Gutner, L. B., Gould, W. J., and Cracovaner, A. J.: The Effects of Cyclizine Hydrochloride and Chlorcyclizine Hydrochloride Upon Vestibular Function, *A.M.A.Arch.Otolaryng.* 59:503 (Apr.) 1954. 2. Witzeman, L. A.: Cyclizine Hydrochloride in the Treatment of Vertigo, *Eye, Ear, Nose and Throat Monthly* 33:298 (May) 1954. 3. Gutner, L. B., Gould, W. J., and Hanley, J. S.: Effect of Meclizine Hydrochloride Upon Vestibular Function, *A.M.A.Arch. Otolaryng.* 62:497 (Nov.) 1955.

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Hydrocortisone	1.0 mg.
Stenediol® (Methandriol)	10.0 mg.
Bifactor® (Vitamin B <sub>12</sub> w/Intrinsic Factor Concentrate)	½ U.S.P. oral unit

← anti-stress aid →  
 ← anabolic aid →  
 ← nutritional aid →

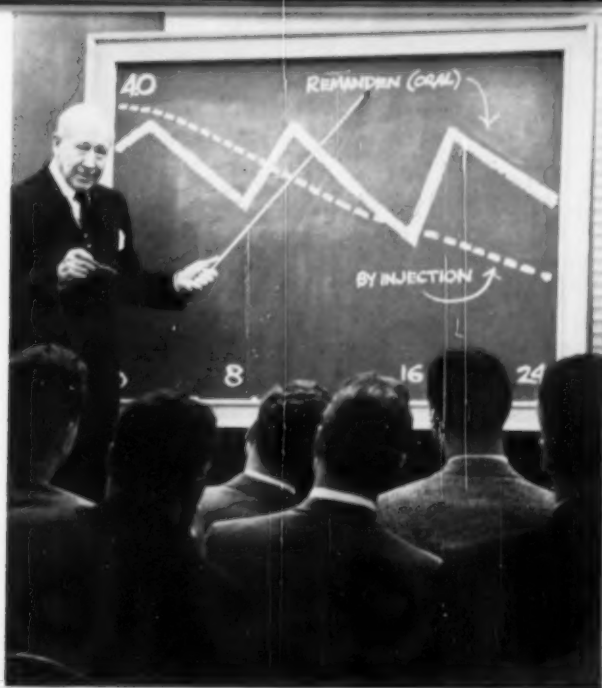
**Each cc provides:**

Hydrocortisone acetate	1.0 mg.
Stenediol® (Methandriol)	10.0 mg.
Vitamin B <sub>12</sub> activity (from Pernaemon®, Liver Injection, U.S.P.)	20.0 mcg.

**Organon inc.**

Orange, N. J.

*Available in 10-cc vials and boxes of 30 tablets. Trial supply and literature available on request.*



**High and prolonged penicillemia—orally**

**REMANDEN<sup>®</sup>**

PENICILLIN WITH BENEMID<sup>®</sup>

REMANDEN provides higher, more prolonged plasma penicillin levels than any other oral penicillin preparation.

REMANDEN allows you full confidence in oral penicillin. The Benemid in REMANDEN is a penicillin-booster, raising plasma levels two- to fourfold. REMANDEN provides plasma concentrations comparable to those of intramuscular injection.

Pleasant-to-take Tablets or Suspension.



**MERCK SHARP & DOHME**

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